أسئلة تدريبية على الدوال الأسية والمتباينات





تم تحميل هذا الملف من موقع المناهج الإماراتية	
موقع المناهج ⇦ المناهج الإماراتية ⇦ الصف الحادي عشر المتقدم ⇦ رياضيات ⇦ الفصل الأول ⇦ ملفات متنوعة ⇦ الملف	
تاريخ إضافة الملف على موقع المناهج: 2026-11-06 23:25:12	
المزيد من مادة رياضيات:	ملفات ا كتب للمعلم ا كتب للطالب ا اختبارات الكترونية ا اختبارات ا حلول ا عروض بوربوينت ا أوراق عمل منهج انجليزي ا ملخصات وتقارير ا مذكرات وبنوك ا الامتحان النهائي ا للمدرس
	إعداد: كرم أسعد

التواصل الاجتماعي بحسب الصف الحادي عشر المتقدم					
صفحة المناهج الإماراتية على فيسبوك					
المواد على تلغرام	التربية الاسلامية	اللغة العربية	اللغة الانجليزية	الرياضيات	

المزيد من الملفات بحسب الصف الحادي عشر المتقدم والمادة رياضيات في الفصل الأول	
1	الهيكل الوزاري 2027 - ريفيل
2	ملزمة مراجعة وتقويم تكويني للوحدة الحادية عشر
3	سلوك التزايد والتناقص للدوال
4	النمو الأسي المستمر وتطبيقاته السكانية
5	اختبر نفسك (3) الدوال الأسية منهج ريفيل

تحميل تطبيق المناهج للهواتف الذكية	
تطبيق المناهج على Store App (آبل)	تطبيق المناهج على Play Google (أندرويد)

ملزمة هيكل 11 متقدم

(ريفيل)

2026-2027

Mathematics

الترم الاول



@MR_KARAM_ASAAD

إعداد

أ / كرم أسعد

لا تتردد في التواصل معنا والاستعداد للامتحان بكل ثقة

0505308082

Multiple Choice Questions

أسئلة اختيار من متعدد

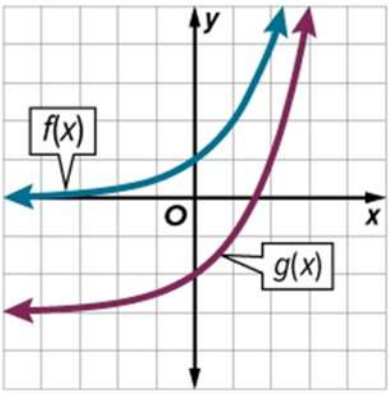
Q	LEARNING OUTCOME	REVEAL (ENGLISH)	PAGE
Q1	Graph exponential growth functions.	(11-13)	221

Identify the value of *k* and write a function *g(x)* for each graph as it relates to *f(x)*.

1

Book #11

$f(x) = 2^x;\ g(x) = f(x) + k$



(A) $k = -1;\ g(x) = 2^x - 1$

(B) $k = 3;\ g(x) = 2^x + 3$

(C) $k = -3;\ g(x) = 2^x - 3$

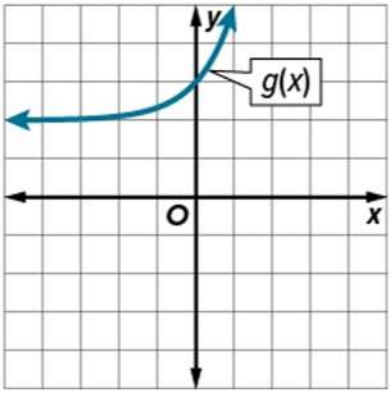
(D) $k = -2;\ g(x) = 2^x - 2$

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2 Book #12

$f(x) = 3^x;\ g(x) = f(x) + k$



(A) $k = 3;\ g(x) = 3^x + 3$

(B) $k = 1;\ g(x) = 3^x + 1$

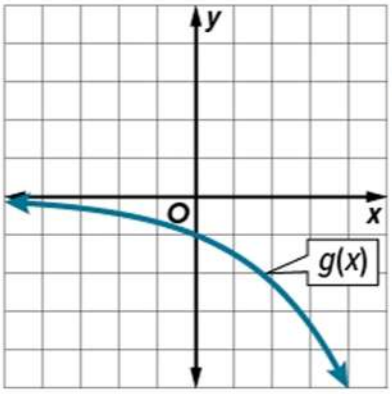
(C) $k = 2;\ g(x) = 3^x + 2$

(D) $k = -2;\ g(x) = 3^x - 2$

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3 Book #13

$f(x) = \left(\frac{3}{2}\right)^x;\ g(x) = k \cdot f(x)$



(A) $k = 1;\ g(x) = \left(\frac{3}{2}\right)^x$

(B) $k = -1;\ g(x) = -\left(\frac{3}{2}\right)^x$

(C) $k = -2;\ g(x) = -2\left(\frac{3}{2}\right)^x$

(D) $k = -\frac{1}{2};\ g(x) = -\frac{1}{2}\left(\frac{3}{2}\right)^x$

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Q	LEARNING OUTCOME	REVEAL (ENGLISH)	PAGE
Q2	Solve exponential inequalities.	(23, 29, 32, 34)	230

Solve each equation or inequality.

4 Book #23

$625 \geq 5^{2a+8}$

(A) $a \geq -2$ (B) $a \leq -6$ (C) $a \leq 2$ (D) $a \leq -2$

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5 Book #29

$\left(\frac{1}{64}\right)^{c-2} < 32^{2c}$

(A) $c > -\frac{3}{4}$ (B) $c > \frac{3}{4}$ (C) $c < \frac{3}{4}$ (D) $c > \frac{4}{3}$

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6 Book #32

$\left(\frac{1}{9}\right)^{3t+5} \leq \left(\frac{1}{243}\right)^{t-6}$

(A) $t \leq -40$ (B) $t \geq -40$ (C) $t \geq -20$ (D) $t \geq 40$

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7 Book #34

$10^{5b+2} > 1000$

(A) $b > \frac{1}{5}$ (B) $b > -\frac{1}{5}$ (C) $b < \frac{1}{5}$ (D) $b > 1$

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Q	LEARNING OUTCOME	REVEAL (ENGLISH)	PAGE
Q3	Write logarithmic expressions in exponential form and write exponential expressions in logarithmic form.	(1-12)	265

8 Book #1

Write each equation in exponential form.

$\log_{15} 225 = 2$

(A) $15^2 = 225$ (B) $225^2 = 15$

(C) $2^{225} = 15$ (D) $2^{15} = 225$

مساحة الحل • Working space

9 Book #2

$\log_3 \frac{1}{27} = -3$

(A) $3^3 = \frac{1}{27}$ (B) $\left(\frac{1}{27}\right)^3 = 3$

(C) $3^{-3} = \frac{1}{27}$ (D) $(-3)^3 = \frac{1}{27}$

مساحة الحل • Working space

10 $\log_5 \frac{1}{25} = -2$

Book #3

(A) $\left(\frac{1}{25}\right)^{-2} = 5$

(B) $5^{-2} = \frac{1}{25}$

(C) $(-2)^5 = \frac{1}{25}$

(D) $5^2 = \frac{1}{25}$

مساحة الحل • Working space

11 $\log_3 243 = 5$

Book #4

(A) $243^5 = 3$

(B) $5^3 = 243$

(C) $3^5 = 243$

(D) $3^{243} = 5$

مساحة الحل • Working space

12 $\log_4 64 = 3$

Book #5

(A) $3^4 = 64$

(B) $4^{64} = 3$

(C) $4^3 = 64$

(D) $64^3 = 4$

مساحة الحل • Working space

13 $\log_4 32 = \frac{5}{2}$

Book #6

(A) $4^{5/2} = 32$

(B) $\left(\frac{5}{2}\right)^4 = 32$

(C) $4^{2/5} = 32$

(D) $32^{5/2} = 4$

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14 Book #7

Write each equation in logarithmic form.

$2^7 = 128$

(A) $\log_2 128 = 7$

(B) $\log_7 128 = 2$

(C) $\log_2 7 = 128$

(D) $\log_{128} 2 = 7$

مساحة الحل • Working space

15 Book #8

$3^{-4} = \frac{1}{81}$

(A) $\log_{\frac{1}{81}} 3 = -4$

(B) $\log_3(-4) = \frac{1}{81}$

(C) $\log_3 \frac{1}{81} = -4$

(D) $\log_4 \frac{1}{81} = 3$

مساحة الحل • Working space

16 Book #9

$7^{-2} = \frac{1}{49}$

(A) $\log_2 \frac{1}{49} = 7$

(B) $\log_{\frac{1}{49}} 7 = -2$

(C) $\log_7(-2) = \frac{1}{49}$

(D) $\log_7 \frac{1}{49} = -2$

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17 Book #10

$\left(\frac{1}{7}\right)^3 = \frac{1}{343}$

(A) $\log_7 \frac{1}{343} = 3$

(B) $\log_{\frac{1}{343}} \frac{1}{7} = 3$

(C) $\log_{\frac{1}{7}} \frac{1}{343} = 3$

(D) $\log_3 \frac{1}{343} = \frac{1}{7}$

مساحة الحل • Working space

18 Book #11

$2^9 = 512$

(A) $\log_2 512 = 9$

(B) $\log_9 512 = 2$

(C) $\log_2 9 = 512$

(D) $\log_{512} 2 = 9$

مساحة الحل • Working space

19 Book #12

$64^{2/3} = 16$

(A) $\log_{16} 64 = \frac{2}{3}$

(B) $\log_{64} 16 = \frac{2}{3}$

(C) $\log_{64} \frac{2}{3} = 16$

(D) $\log_{\frac{2}{3}} 16 = 64$

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Q	LEARNING OUTCOME	REVEAL (ENGLISH)	PAGE
Q4	Solve logarithmic equations using the properties of logarithms.	(7-12)	273

Solve each equation. Check for any extraneous solutions.

20 Book #7

$\log_4(2x^2 - 4) = \log_4 2x$

(A) $x = -2$

(B) $x = 2$ and $x = -1$

(C) $x = -1$

(D) $x = 2$

مساحة الحل • Working space

21 Book #8

$\log_5(x^2 - 6) = \log_5 x$

(A) $x = 3$ and $x = -2$

(B) $x = 6$

(C) $x = 3$

(D) $x = -2$

مساحة الحل • Working space

22 Book #9

$\log_3(x^2 - 8) = \log_3 2x$

(A) $x = 4$ and $x = -2$

(B) $x = 4$

(C) $x = -2$

(D) $x = 8$

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23 Book #10

$\log_4(2x^2 - 20) = \log_4 6x$

(A) $x = 10$

(B) $x = 5$ and $x = -2$

(C) $x = -2$

(D) $x = 5$

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24 Book #11

$\log_2(6x^2 + 1) = \log_2 5x$

(A) $x = \frac{1}{2}$ only

(B) $x = -\frac{1}{2}$ and $x = -\frac{1}{3}$

(C) $x = \frac{1}{3}$ only

(D) $x = \frac{1}{2}$ and $x = \frac{1}{3}$

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25 Book #12

$\log_6(6x^2 - 3) = \log_6 7x$

(A) $x = \frac{3}{2}$

(B) $x = 3$

(C) $x = \frac{3}{2}$ and $x = -\frac{1}{3}$

(D) $x = -\frac{1}{3}$

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Q	LEARNING OUTCOME	REVEAL (ENGLISH)	PAGE
Q5	Evaluate logarithmic expressions using the Change of Base Formula.	Example 5	279

26 Evaluate $\log_2 11$ by writing it in terms of common logarithms. Round to the nearest ten-thousandth.

(A) 5.5000 (B) 3.4594 (C) 3.4940 (D) 0.2891

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Q	LEARNING OUTCOME	REVEAL (ENGLISH)	PAGE
Q6	Evaluate expressions involving the natural base and natural logarithm.	Example 3	286

27 Write $\frac{1}{3}\ln 8 - \ln 3 + \ln 9$ as a single logarithm.

(A) $\ln 3$ (B) $\ln 6$ (C) $\ln 8$ (D) $\ln 24$

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Q	LEARNING OUTCOME	REVEAL (ENGLISH)	PAGE
Q7	Simplify rational expressions.	Example 1	311

28 Simplify $\dfrac{x^2-2x-24}{2x^3+6x^2-8x}$, and state when the original expression is undefined.

(A) $\dfrac{x-6}{2(x-1)}$; undefined at $x=1$

(B) $\dfrac{x-6}{2x(x+4)}$; undefined at $x=-4,\ 0$

(C) $\dfrac{x-6}{2x(x-1)}$; undefined at $x=-4,\ 0,\ 1$

(D) $\dfrac{x-6}{2x(x-1)}$; undefined at $x=0,\ 1$

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Q	LEARNING OUTCOME	REVEAL (ENGLISH)	PAGE
Q8	Simplify complex algebraic fractions including rational expressions.	(16-19)	323

Simplify each expression.

29 Book #16

$$\frac{\dfrac{2}{x-3}+\dfrac{3x}{x^2-9}}{\dfrac{3}{x+3}-\dfrac{4x}{x^2-9}}$$

(A) $-\dfrac{5x+6}{x+9}$

(B) $\dfrac{5x+6}{x+9}$

(C) $-\dfrac{5x-6}{x+9}$

(D) $-\dfrac{x+9}{5x+6}$

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30 Book #17

$$\frac{\frac{4}{x+5}+\frac{9}{x-6}}{\frac{5}{x-6}-\frac{8}{x+5}}$$

(A) $\frac{13x+21}{3x-73}$

(B) $\frac{73-3x}{13x+21}$

(C) $\frac{13x-21}{73-3x}$

(D) $\frac{13x+21}{73-3x}$

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31 Book #18

$$\frac{\frac{5}{x+6}-\frac{2x}{2x-1}}{\frac{x}{2x-1}+\frac{4}{x+6}}$$

(A) $-\frac{2x^2-2x+5}{x^2+14x-4}$

(B) $-\frac{x^2+14x-4}{2x^2+2x+5}$

(C) $-\frac{2x^2+2x+5}{x^2+14x-4}$

(D) $\frac{2x^2+2x+5}{x^2+14x-4}$

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32

Book #19

$$\frac{\frac{8}{x-9}-\frac{x}{3x+2}}{\frac{3}{3x+2}+\frac{4x}{x-9}}$$

(A) $\frac{12x^2+11x-27}{-x^2+33x+16}$

(B) $\frac{-x^2+33x+16}{12x^2+11x-27}$

(C) $\frac{x^2-33x-16}{12x^2+11x-27}$

(D) $\frac{-x^2+33x+16}{12x^2-11x-27}$

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Q	LEARNING OUTCOME	REVEAL (ENGLISH)	PAGE
Q9	Graph transformations of reciprocal functions.	(13-16)	333

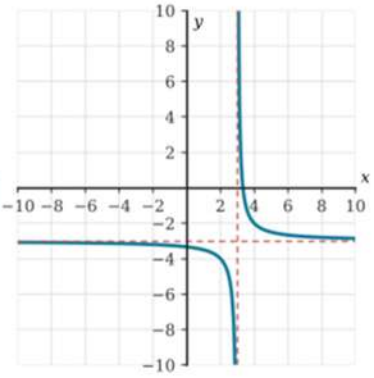
Graph each function. State the domain and range.

33 Book #13

$$f(x) = \frac{1}{x+3} - 3$$

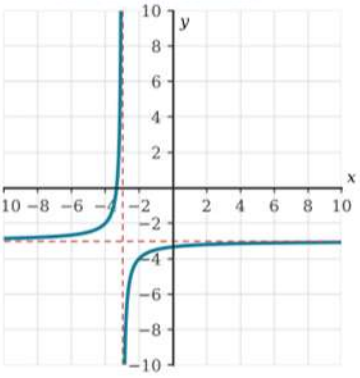
Which graph shows the function with its correct domain and range?

A



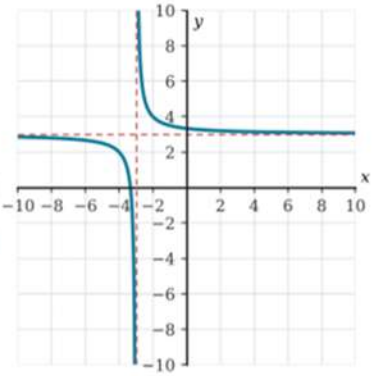
Domain: $x \neq 3$
Range: $y \neq -3$

B



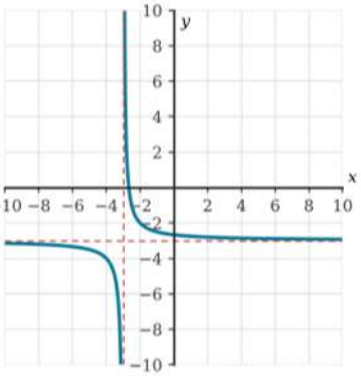
Domain: $x \neq -3$
Range: $y \neq -3$

C



Domain: $x \neq -3$
Range: $y \neq 3$

D



Domain: $x \neq -3$
Range: $y \neq -3$

مساحة الحل • Working space

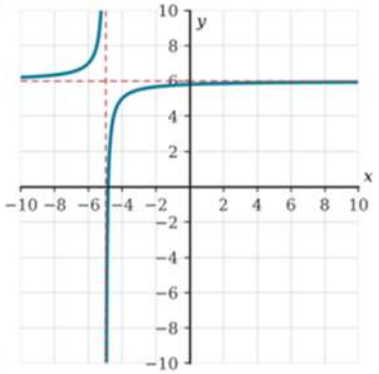
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34 Book #14

$$f(x) = \frac{-1}{x+5} - 6$$

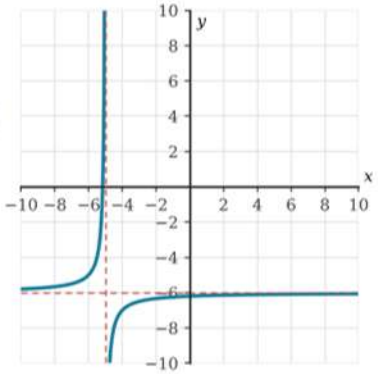
Which graph shows the function with its correct domain and range?

A



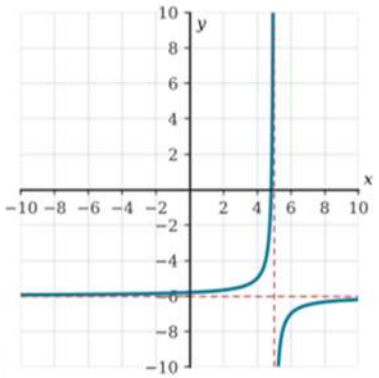
Domain: $x \neq -5$
Range: $y \neq 6$

B



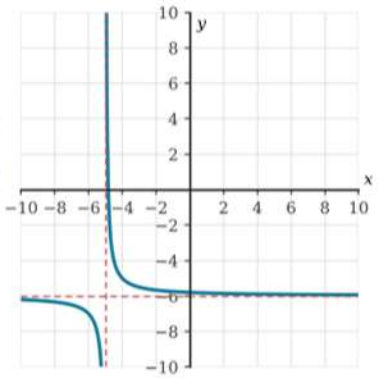
Domain: $x \neq -5$
Range: $y \neq -6$

C



Domain: $x \neq 5$
Range: $y \neq -6$

D



Domain: $x \neq -5$
Range: $y \neq -6$

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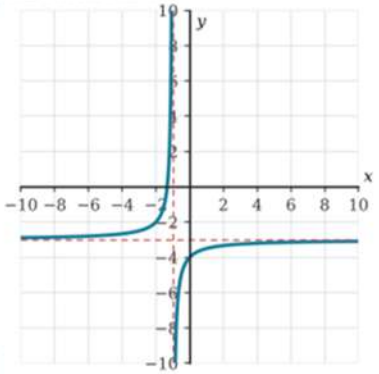
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35 Book #15

$$f(x) = \frac{-1}{x+1} + 3$$

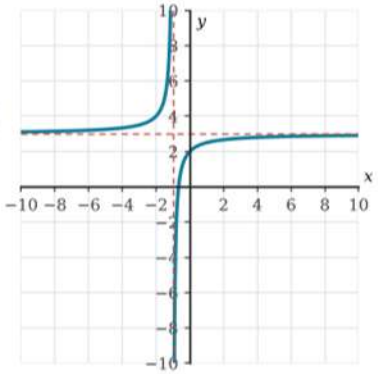
Which graph shows the function with its correct domain and range?

A



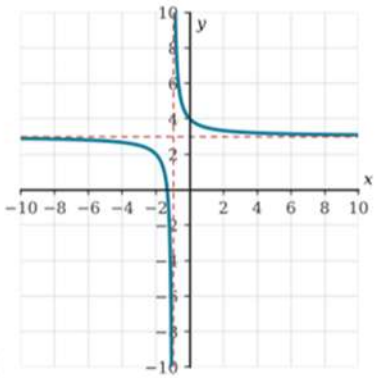
Domain: $x \neq -1$
Range: $y \neq -3$

B



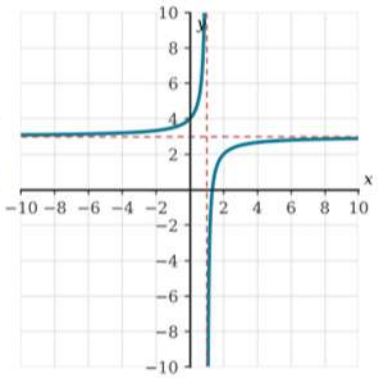
Domain: $x \neq -1$
Range: $y \neq 3$

C



Domain: $x \neq -1$
Range: $y \neq 3$

D



Domain: $x \neq 1$
Range: $y \neq 3$

مساحة الحل • Working space

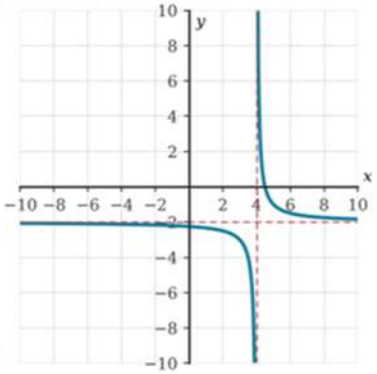
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36 Book #16

$$f(x) = \frac{1}{x+4} - 2$$

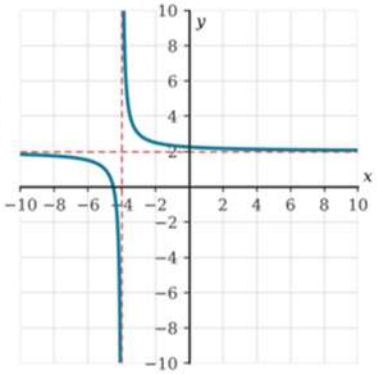
Which graph shows the function with its correct domain and range?

A



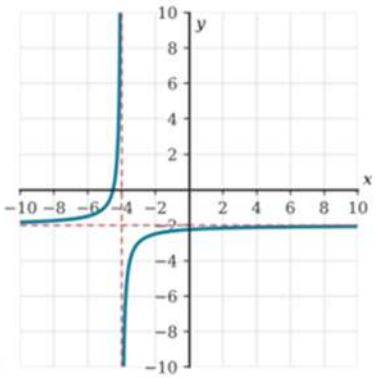
Domain: $x \neq 4$
Range: $y \neq -2$

B



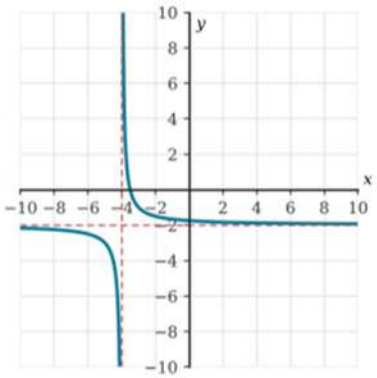
Domain: $x \neq -4$
Range: $y \neq 2$

C



Domain: $x \neq -4$
Range: $y \neq -2$

D



Domain: $x \neq -4$
Range: $y \neq -2$

مساحة الحل • Working space

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Q	LEARNING OUTCOME	REVEAL (ENGLISH)	PAGE
Q10	Solve rational equations.	Example 2	356

37 Solve $\frac{2m}{m-4} - \frac{m^2+7m+4}{3m^2-18m+24} = \frac{4m}{3m-6}$.

(A) No solution

(B) $m = 4$

(C) $m = -1$ and $m = 4$

(D) $m = -1$

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Q	LEARNING OUTCOME	REVEAL (ENGLISH)	PAGE
Q11	Classify and determine study types.	Learn • Types of Studies	372

38 **UNIFORMS** A research team wants to test new football uniform designs and their appeal to young adults. They randomly select 100 young adults to view the different uniforms. The research team observes and records the reactions to the uniforms.

Step 1 What is the purpose of the study?

(A) To determine whether young adults prefer football to other sports

(B) To determine how appealing the new football uniform designs are to young adults

(C) To determine how much it costs to produce football uniforms

(D) To determine which team wins more games when wearing the new uniforms

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39 **UNIFORMS** (same study)

Step 2 Does this situation represent a *survey*, an *experiment*, or an *observational study*?

(A) Experiment – the researchers apply a treatment to the young adults

(B) None of these – no study is described

(C) Survey – the young adults are asked questions

(D) Observational study – the researchers only observe and record the reactions

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40 **UNIFORMS** (same study)

Step 3 Identify the sample and population.

(A) Sample: the 100 randomly selected young adults; Population: all young adults

(B) Sample: the football uniforms; Population: all football teams

(C) Sample: all young adults; Population: the 100 randomly selected young adults

(D) Sample: the research team; Population: the 100 young adults

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41 **Determine whether each situation describes a *survey*, an *experiment*, or an *observational study*. Then identify the sample, and suggest a population from which it may have been selected.**

حدد ما إذا كان كل موقف يصف مسحا أو تجربة أو دراسة قائمة على الملاحظة. ثم حدد العينة ، واقترح مجموعة سكانية ربما تم اختيارها منها.

An Internet service provider conducts an online study in which customers are randomly selected and asked to provide feedback on their customer service.

يقوم مزود خدمة الإنترنت بإجراء دراسة عبر الإنترنت يتم فيها اختيار العملاء بشكل عشوائي ويطلب منهم تقديم ملاحظات حول خدمة العملاء الخاصة بهم

(A) Survey; Sample: the randomly selected customers asked for feedback; Population: all customers of the Internet service provider

(B) Observational study; Sample: the Internet service provider; Population: all Internet users

(C) Experiment; Sample: the randomly selected customers; Population: all customers of the Internet service provider

(D) Survey; Sample: all customers of the Internet service provider; Population: the randomly selected customers

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42 A research group randomly selects 100 business owners, half of whom started their own businesses, and compares their success.

تختار مجموعة بحثية بشكل عشوائي 100 من أصحاب الأعمال ، نصفهم بدأوا أعمالهم التجارية الخاصة ، وتقارن نجاحهم

(A) Observational study; Sample: the 50 owners who started their own businesses; Population: the 100 business owners

(B) Experiment; Sample: the 100 randomly selected business owners; Population: all business owners

(C) Survey; Sample: all business owners; Population: the 100 randomly selected business owners

(D) Observational study; Sample: the 100 randomly selected business owners; Population: all business owners

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43 A research group randomly chooses 50 people to participate in a study to determine whether exercising regularly reduces the risk of diabetes in adults.

تختار مجموعة بحثية بشكل عشوائي 50 شخصا للمشاركة في دراسة لتحديد ما إذا كانت ممارسة الرياضة بانتظام تقلل من خطر الإصابة بمرض السكري لدى البالغين

(A) Experiment; Sample: the 50 randomly chosen people; Population: all adults

(B) Observational study; Sample: all adults; Population: the 50 randomly chosen people

(C) Experiment; Sample: all adults with diabetes; Population: the 50 randomly chosen people

(D) Survey; Sample: the 50 randomly chosen people; Population: all adults

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44 An online video streaming service mails a questionnaire to randomly selected people across the country to determine whether they prefer streaming movies or sports.

ترسل خدمة بث الفيديو عبر الإنترنت استبيانا بالبريد إلى الأشخاص المختارين عشوائيا في جميع أنحاء البلاد لتحديد ما إذا كانوا يفضلون بث الأفلام أو الرياضة

(A) Survey; Sample: people that receive the questionnaire; Population: all online video streaming viewers

(B) Experiment; Sample: people that receive the questionnaire; Population: all online video streaming viewers

(C) Survey; Sample: all online video streaming viewers; Population: people that receive the questionnaire

(D) Observational study; Sample: the online video streaming service; Population: all online video streaming viewers

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45 Researchers want to determine a teacher's effectiveness. They observe five class periods and record the difficulty of the lesson, students' reactions, and the overall effectiveness of the lesson. The results are shown in the table. Identify the type of study. Draw a conclusion about the study based on the results. Explain your reasoning.

التعليم يريد الباحثون تحديد فعالية المعلم. يلاحظون خمس فترات دراسية ويسجلون صعوبة الدرس وردود أفعال الطلاب والفعالية الإجمالية للدرس. النتائج موضحة في الجدول. تحديد نوع الدراسة. استخلاص استنتاج حول الدراسة بناء على النتائج. اشرح أسبابك

Period	Difficulty of Lesson	Student Reaction	Effectiveness (%)
1	Easy	Engaged	91%
2	Difficult	Engaged	97%
3	Medium	Engaged	93%
4	Difficult	Not Engaged	60%
5	Easy	Not Engaged	55%

(A) Survey; the teacher's students are equally interested at every time of the day.

(B) Observational study; the teacher can engage his or her students more easily later in the day than early in the day.

(C) Experiment; the teacher can engage his or her students early in the day, but his or her students tend to lose interest later in the day.

(D) Observational study; the teacher can engage his or her students early in the day, but his or her students tend to lose interest later in the day.

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Q	LEARNING OUTCOME	REVEAL (ENGLISH)	PAGE
Q12	Find and compare experimental and theoretical probabilities.	Example 1	379

46 A student tossed a fair eight-sided die 200 times and recorded the results. Find the theoretical and experimental probabilities of rolling an 8.

Number on Die	Frequency
1	28
2	19
3	24
4	22
5	21
6	18
7	26
8	42

(A) Theoretical: $\frac{1}{8}$; Experimental: $\frac{1}{25}$

(B) Theoretical: $\frac{21}{100}$; Experimental: $\frac{1}{8}$

(C) Theoretical: $\frac{1}{8}$; Experimental: $\frac{21}{100}$

(D) Theoretical: $\frac{1}{200}$; Experimental: $\frac{21}{100}$

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Q	LEARNING OUTCOME	REVEAL (ENGLISH)	PAGE
Q13	Design simulations to estimate probabilities.	(7, 8)	384

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47 Book #7

Describe a spinner that could be used to simulate an event with 2 possible outcomes, one with a probability of 60%.

Which spinner (10 equal sections) could be used?

A 

B 

C 

D 

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48 Book #8

How should numbers be assigned to use a random number generator for the following situation?

Probability of choosing blue: 40%
Probability of choosing green: 20%
Probability of choosing red: 30%
Probability of choosing purple: 10%

A Sample answer: assign 1–10; blue 1–4, green 5–6, red 7–9, purple 10

B Sample answer: assign 1–10; blue 1–5, green 6, red 7–9, purple 10

C Sample answer: assign 1–10; blue 1–3, green 4–5, red 6–9, purple 10

D Sample answer: assign 1–10; blue 1–4, green 5–7, red 8–9, purple 10

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Q	LEARNING OUTCOME		REVEAL (ENGLISH)	PAGE
Q14	Describe a data distribution by its center, spread, and overall shape.	(No need for graphing calculator)	Example 1 (1, 2)	388 391

49 **TRACK** A coach recorded the times of each track member for a 400-meter race. Find and interpret the standard deviation of the data.

400m Race Times (seconds)	
57.1	55.9
59.3	54.9
54.6	50.3
55.2	53.5

(A) The standard deviation is about 2.62; almost all of the times will likely fall between 49.9 and 60.3 seconds.

(B) The standard deviation is about 2.45; almost all of the times will likely fall between 52.7 and 57.6 seconds.

(C) The standard deviation is about 2.45; almost all of the times will likely fall between 50.2 and 60.0 seconds.

(D) The standard deviation is about 6.02; almost all of the times will likely fall between 43.1 and 67.1 seconds.

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50 Book #1

BARBER A barber wants to purchase new professional shears from a Web site. The prices of all of the shears are shown in the table. Use the standard deviation formula to find and interpret the standard deviation of the data. Round your answers to the nearest cent.

Cost of Shears ($)			
50	165	55	79
84	68	38	42

(A) 40.85; most of the shears cost between $31.78 and $113.48.

(B) 38.22; most of the shears cost between $34.41 and $110.85.

(C) 1460.48; most of the shears cost between −$1,387.85 and $1,533.11.

(D) 38.22; most of the shears cost between $72.63 and $110.85.

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51 Book #2

READING Ms. Sanchez keeps track of the total number of books each student in the book club reads during the school year. Use the standard deviation formula to find and interpret the standard deviation of the data. Round your answers to the nearest tenth.

Books Read		
9	6	12
8	9	14
10	13	8

(A) 2.5; most members read between 7.4 and 12.4 books.

(B) 2.6; most members read between 7.3 and 12.5 books.

(C) 2.5; most members read between 9.9 and 12.4 books.

(D) 6.1; most members read between 3.8 and 16.0 books.

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Q	LEARNING OUTCOME	REVEAL (ENGLISH)	PAGE
Q15	Draw and find angles in standard position.	Example 3	418

52 Find an angle with a positive measure and an angle with a negative measure that are coterminal with a $35°$ angle.

(A) $215°$ and $-145°$

(B) $325°$ and $-395°$

(C) $385°$ and $-335°$

(D) $395°$ and $-325°$

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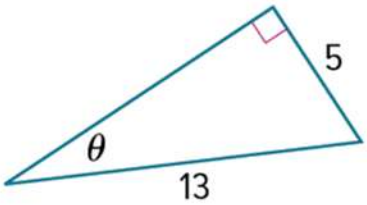
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Q	LEARNING OUTCOME	REVEAL (ENGLISH)	PAGE
Q16	Find values of trigonometric ratios.	(1-6)	431

Find the exact values of the six trigonometric functions for angle θ.

53

Book #1



(A) $\sin\theta = \frac{5}{13}$ $\cos\theta = \frac{12}{13}$ $\tan\theta = \frac{5}{12}$
$\csc\theta = \frac{13}{5}$ $\sec\theta = \frac{13}{12}$ $\cot\theta = \frac{12}{5}$

(B) $\sin\theta = \frac{5}{13}$ $\cos\theta = \frac{12}{13}$ $\tan\theta = \frac{12}{5}$
$\csc\theta = \frac{13}{5}$ $\sec\theta = \frac{13}{12}$ $\cot\theta = \frac{5}{12}$

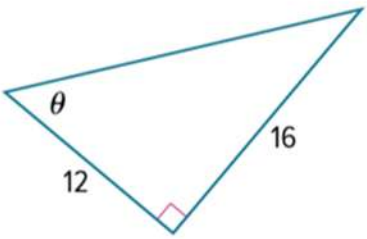
(C) $\sin\theta = \frac{13}{5}$ $\cos\theta = \frac{13}{12}$ $\tan\theta = \frac{12}{5}$
$\csc\theta = \frac{5}{13}$ $\sec\theta = \frac{12}{13}$ $\cot\theta = \frac{5}{12}$

(D) $\sin\theta = \frac{12}{13}$ $\cos\theta = \frac{5}{13}$ $\tan\theta = \frac{12}{5}$
$\csc\theta = \frac{13}{12}$ $\sec\theta = \frac{13}{5}$ $\cot\theta = \frac{5}{12}$

مساحة الحل • Working space

54

Book #2



(A) $\sin\theta = \frac{4}{5}$ $\cos\theta = \frac{3}{5}$ $\tan\theta = \frac{4}{3}$
$\csc\theta = \frac{5}{4}$ $\sec\theta = \frac{5}{3}$ $\cot\theta = \frac{3}{4}$

(B) $\sin\theta = \frac{3}{5}$ $\cos\theta = \frac{4}{5}$ $\tan\theta = \frac{3}{4}$
$\csc\theta = \frac{5}{3}$ $\sec\theta = \frac{5}{4}$ $\cot\theta = \frac{4}{3}$

(C) $\sin\theta = \frac{5}{4}$ $\cos\theta = \frac{5}{3}$ $\tan\theta = \frac{3}{4}$
$\csc\theta = \frac{4}{5}$ $\sec\theta = \frac{3}{5}$ $\cot\theta = \frac{4}{3}$

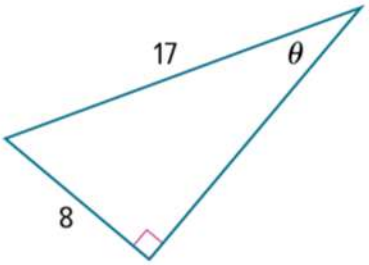
(D) $\sin\theta = \frac{4}{5}$ $\cos\theta = \frac{3}{5}$ $\tan\theta = \frac{3}{4}$
$\csc\theta = \frac{5}{4}$ $\sec\theta = \frac{5}{3}$ $\cot\theta = \frac{4}{3}$

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55

Book #3



(A) $\sin\theta = \frac{8}{17}$ $\cos\theta = \frac{15}{17}$ $\tan\theta = \frac{15}{8}$
$\csc\theta = \frac{17}{8}$ $\sec\theta = \frac{17}{15}$ $\cot\theta = \frac{8}{15}$

(B) $\sin\theta = \frac{17}{8}$ $\cos\theta = \frac{17}{15}$ $\tan\theta = \frac{15}{8}$
$\csc\theta = \frac{8}{17}$ $\sec\theta = \frac{15}{17}$ $\cot\theta = \frac{8}{15}$

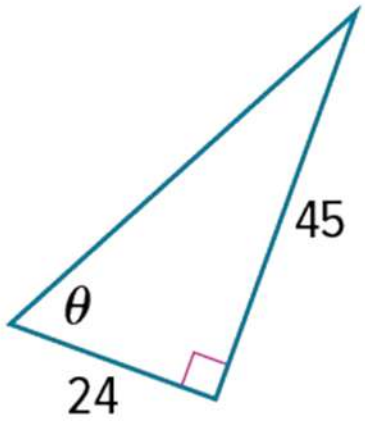
(C) $\sin\theta = \frac{15}{17}$ $\cos\theta = \frac{8}{17}$ $\tan\theta = \frac{15}{8}$
$\csc\theta = \frac{17}{15}$ $\sec\theta = \frac{17}{8}$ $\cot\theta = \frac{8}{15}$

(D) $\sin\theta = \frac{8}{17}$ $\cos\theta = \frac{15}{17}$ $\tan\theta = \frac{8}{15}$
$\csc\theta = \frac{17}{8}$ $\sec\theta = \frac{17}{15}$ $\cot\theta = \frac{15}{8}$

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56

Book #4



(A) $\sin\theta = \frac{15}{17}$ $\cos\theta = \frac{8}{17}$ $\tan\theta = \frac{8}{15}$
$\csc\theta = \frac{17}{15}$ $\sec\theta = \frac{17}{8}$ $\cot\theta = \frac{15}{8}$

(B) $\sin\theta = \frac{15}{17}$ $\cos\theta = \frac{8}{17}$ $\tan\theta = \frac{15}{8}$
$\csc\theta = \frac{17}{15}$ $\sec\theta = \frac{17}{8}$ $\cot\theta = \frac{8}{15}$

(C) $\sin\theta = \frac{17}{15}$ $\cos\theta = \frac{17}{8}$ $\tan\theta = \frac{8}{15}$
$\csc\theta = \frac{15}{17}$ $\sec\theta = \frac{8}{17}$ $\cot\theta = \frac{15}{8}$

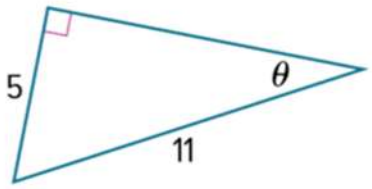
(D) $\sin\theta = \frac{8}{17}$ $\cos\theta = \frac{15}{17}$ $\tan\theta = \frac{8}{15}$
$\csc\theta = \frac{17}{8}$ $\sec\theta = \frac{17}{15}$ $\cot\theta = \frac{15}{8}$

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57

Book #5



(A) $\sin\theta = \frac{5}{11}$ $\cos\theta = \frac{4\sqrt{6}}{11}$ $\tan\theta = \frac{4\sqrt{6}}{5}$
$\csc\theta = \frac{11}{5}$ $\sec\theta = \frac{11\sqrt{6}}{24}$ $\cot\theta = \frac{5\sqrt{6}}{24}$

(B) $\sin\theta = \frac{11}{5}$ $\cos\theta = \frac{11\sqrt{6}}{24}$ $\tan\theta = \frac{4\sqrt{6}}{5}$
$\csc\theta = \frac{5}{11}$ $\sec\theta = \frac{4\sqrt{6}}{11}$ $\cot\theta = \frac{5\sqrt{6}}{24}$

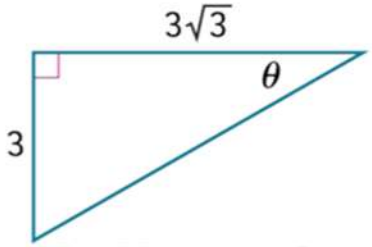
(C) $\sin\theta = \frac{5}{11}$ $\cos\theta = \frac{4\sqrt{6}}{11}$ $\tan\theta = \frac{5\sqrt{6}}{24}$
$\csc\theta = \frac{11}{5}$ $\sec\theta = \frac{11\sqrt{6}}{24}$ $\cot\theta = \frac{4\sqrt{6}}{5}$

(D) $\sin\theta = \frac{4\sqrt{6}}{11}$ $\cos\theta = \frac{5}{11}$ $\tan\theta = \frac{4\sqrt{6}}{5}$
$\csc\theta = \frac{11\sqrt{6}}{24}$ $\sec\theta = \frac{11}{5}$ $\cot\theta = \frac{5\sqrt{6}}{24}$

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58

Book #6



(A) $\sin\theta = \frac{1}{2}$ $\cos\theta = \frac{\sqrt{3}}{2}$ $\tan\theta = \sqrt{3}$
$\csc\theta = 2$ $\sec\theta = \frac{2\sqrt{3}}{3}$ $\cot\theta = \frac{\sqrt{3}}{3}$

(B) $\sin\theta = \frac{\sqrt{3}}{2}$ $\cos\theta = \frac{1}{2}$ $\tan\theta = \sqrt{3}$
$\csc\theta = \frac{2\sqrt{3}}{3}$ $\sec\theta = 2$ $\cot\theta = \frac{\sqrt{3}}{3}$

(C) $\sin\theta = \frac{1}{2}$ $\cos\theta = \frac{\sqrt{3}}{2}$ $\tan\theta = \frac{\sqrt{3}}{3}$
$\csc\theta = 2$ $\sec\theta = \frac{2\sqrt{3}}{3}$ $\cot\theta = \sqrt{3}$

(D) $\sin\theta = 2$ $\cos\theta = \frac{2\sqrt{3}}{3}$ $\tan\theta = \sqrt{3}$
$\csc\theta = \frac{1}{2}$ $\sec\theta = \frac{\sqrt{3}}{2}$ $\cot\theta = \frac{\sqrt{3}}{3}$

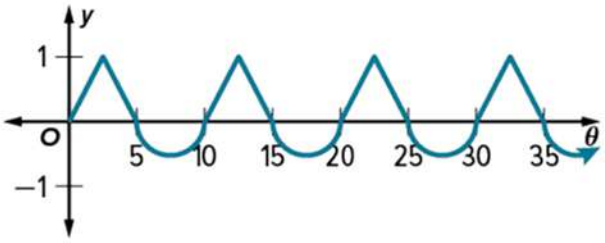
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Q	LEARNING OUTCOME	REVEAL (ENGLISH)	PAGE
Q17	Use the properties of periodic functions to evaluate trigonometric functions.	(13-18)	441

Determine the period of the function.

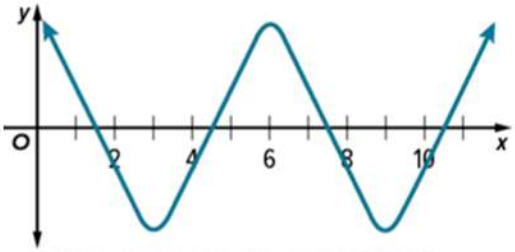
59 Book #13



(A) 2.5 (B) 5 (C) 20 (D) 10

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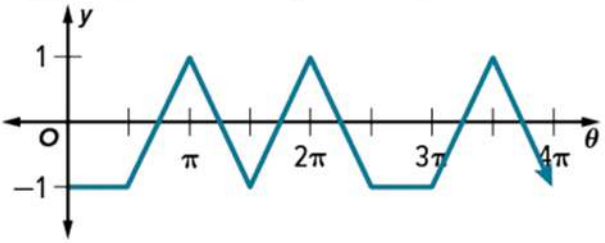
60 Book #14



(A) 6 (B) 12 (C) 9 (D) 3

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61 Book #15

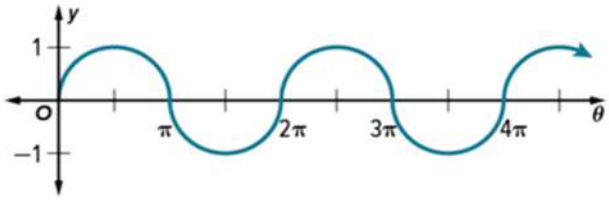


(A) 3π (B) $\frac{5\pi}{2}$ (C) 5π (D) 2π

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62

Book #16

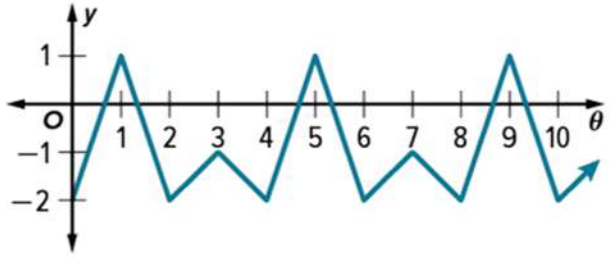


(A) π (B) 4π (C) 3π (D) 2π

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63

Book #17

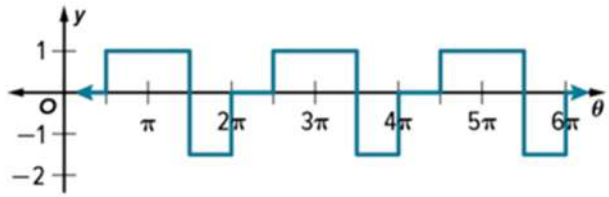


(A) 4 (B) 8 (C) 6 (D) 2

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64

Book #18



(A) 3π (B) 4π (C) 2π (D) π

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Q	LEARNING OUTCOME	REVEAL (ENGLISH)	PAGE
Q18	Use sinusoidal functions to solve problems.	Example 6 11	450 479

65 **ELECTRICITY** The voltage supplied by an electrical outlet can be represented by a periodic function. The voltage oscillates between −120 and 120 volts, with a frequency of 50 cycles per second. Write and graph a function for the voltage v as a function of time t.

(A) $v = 240\sin(100\pi t)$

(B) $v = 120\sin(50t)$

(C) $v = 120\sin(100\pi t)$

(D) $v = 120\sin(50\pi t)$

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66 Book #11 **MULTIPLE CHOICE** A spring oscillates with a frequency of 1 cycle per second. The distance between the maximum and minimum points of the oscillation is 3 centimeters. Which of these functions can be used to model the oscillation if y represents the distance in centimeters from the equilibrium position and t is given in seconds? (Lesson 9-4)

(A) $y = 3\sin 2\pi t$

(B) $y = 1.5\sin 2\pi t$

(C) $y = 1.5\sin \pi t$

(D) $y = 3\sin \pi t$

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Q	LEARNING OUTCOME	REVEAL (ENGLISH)	PAGE
Q19	Describe and graph trigonometric functions other than sine, cosine, and tangent.	(7-15)	461

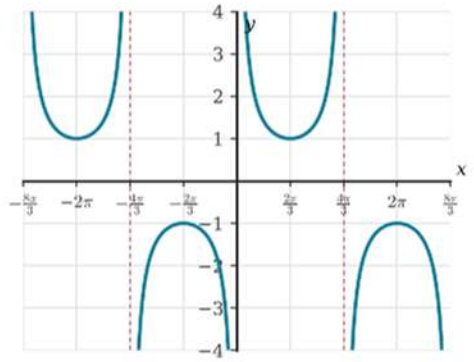
Find the period and asymptotes of each function, the relative extrema of each secant and cosecant function, and the *x*-intercepts of each cotangent function. Then graph each function.

67 Book #7

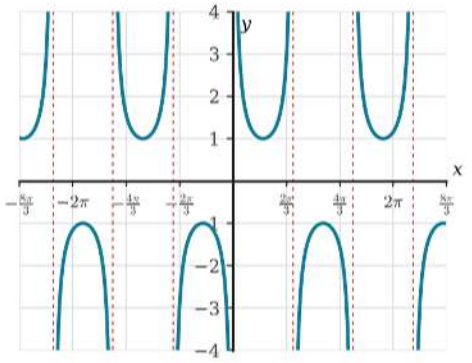
$y = \csc \frac{3}{4}x$

Which graph represents the function?

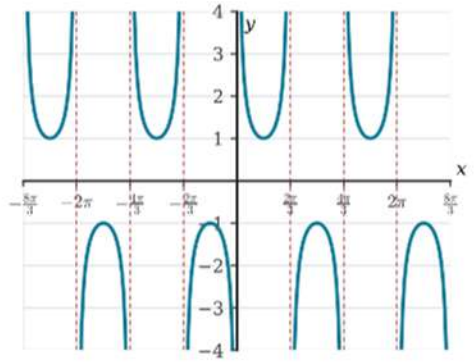
A



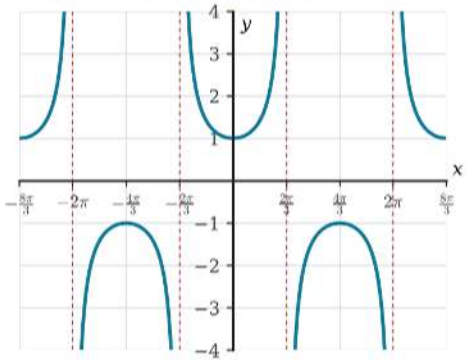
B



C



D



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68 Book #7

$y = \csc \frac{3}{4}x$

Find the period and the equations of the vertical asymptotes.

(A) Period $\frac{3\pi}{2}$; $x = \frac{3\pi}{4}\,n,\ n \in \mathbb{Z}$

(B) Period $\frac{8\pi}{3}$; $x = \frac{2\pi}{3}\,(2n+1),\ n \in \mathbb{Z}$

(C) Period $\frac{4\pi}{3}$; $x = \frac{4\pi}{3}\,n,\ n \in \mathbb{Z}$

(D) Period $\frac{8\pi}{3}$; $x = \frac{4\pi}{3}\,n,\ n \in \mathbb{Z}$

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69 Book #7

$y = \csc \frac{3}{4}x$

Find the relative extrema of this cosecant function.

(A) Minima: $y = 1$ at $x = \frac{2\pi}{3}\,(4n+3)$; maxima: $y = -1$ at $x = \frac{2\pi}{3}\,(4n+1)$

(B) Minima: $y = 1$ at $x = \frac{4\pi}{3}\,(2n)$; maxima: $y = -1$ at $x = \frac{4\pi}{3}\,(2n+1)$

(C) Minima: $y = 1$ at $x = \frac{2\pi}{3}\,(4n+1)$; maxima: $y = -1$ at $x = \frac{2\pi}{3}\,(4n+3)$

(D) Minima: $y = 2$ at $x = \frac{2\pi}{3}\,(4n+1)$; maxima: $y = -2$ at $x = \frac{2\pi}{3}\,(4n+3)$

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70 Book #8

$y = \csc 3x$

Find the period and the equations of the vertical asymptotes.

(A) Period 6π; $x = 3\pi n,\ n \in \mathbb{Z}$

(B) Period $\frac{\pi}{3}$; $x = \frac{\pi}{3} n,\ n \in \mathbb{Z}$

(C) Period $\frac{2\pi}{3}$; $x = \frac{\pi}{3} n,\ n \in \mathbb{Z}$

(D) Period $\frac{2\pi}{3}$; $x = \frac{\pi}{6}(2n+1),\ n \in \mathbb{Z}$

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71 Book #8

$y = \csc 3x$

Find the relative extrema of this cosecant function.

(A) relative minima at $x = \frac{\pi}{2}$, $x = \frac{5\pi}{2}$, or $x = \frac{\pi}{2} + 2\pi n$, where n is an integer; relative maxima at $x = \frac{3\pi}{2}$, $x = \frac{7\pi}{2}$, or $x = \frac{3\pi}{2} + 2\pi n$, where n is an integer

(B) relative minima at $x = \frac{\pi}{2}$, $x = \frac{7\pi}{6}$, or $x = \frac{\pi}{2} + \frac{2\pi}{3} n$, where n is an integer; relative maxima at $x = \frac{\pi}{6}$, $x = \frac{5\pi}{6}$, or $x = \frac{\pi}{6} + \frac{2\pi}{3} n$, where n is an integer

(C) relative minima at $x = \frac{\pi}{6}$, $x = \frac{13\pi}{6}$, or $x = \frac{\pi}{6} + 2\pi n$, where n is an integer; relative maxima at $x = \frac{\pi}{2}$, $x = \frac{5\pi}{2}$, or $x = \frac{\pi}{2} + 2\pi n$, where n is an integer

(D) relative minima at $x = \frac{\pi}{6}$, $x = \frac{5\pi}{6}$, or $x = \frac{\pi}{6} + \frac{2\pi}{3} n$, where n is an integer; relative maxima at $x = \frac{\pi}{2}$, $x = \frac{7\pi}{6}$, or $x = \frac{\pi}{2} + \frac{2\pi}{3} n$, where n is an integer

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72 Book #9

$y = \frac{1}{2}\csc x$

Find the period and the equations of the vertical asymptotes.

(A) period $= 4\pi$; asymptotes: $x = 2\pi + 4\pi n$, where n is an integer

(B) period $= 2\pi$; asymptotes: $x = \frac{\pi}{2} + \pi n$, where n is an integer

(C) period $= 2\pi$; asymptotes: $x = 2\pi + 2\pi n$, where n is an integer

(D) period $= \pi$; asymptotes: $x = \pi + \pi n$, where n is an integer

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73 Book #9

$y = \frac{1}{2}\csc x$

Find the relative extrema of this cosecant function.

(A) Minima: $y = \frac{1}{2}$ at $x = \frac{\pi}{2}(4n+3)$; maxima: $y = -\frac{1}{2}$ at $x = \frac{\pi}{2}(4n+1)$

(B) Minima: $y = \frac{1}{2}$ at $x = \frac{\pi}{2}(4n+1)$; maxima: $y = -\frac{1}{2}$ at $x = \frac{\pi}{2}(4n+3)$

(C) Minima: $y = \frac{1}{2}$ at $x = \pi(2n)$; maxima: $y = -\frac{1}{2}$ at $x = \pi(2n+1)$

(D) Minima: $y = 1$ at $x = \frac{\pi}{2}(4n+1)$; maxima: $y = -1$ at $x = \frac{\pi}{2}(4n+3)$

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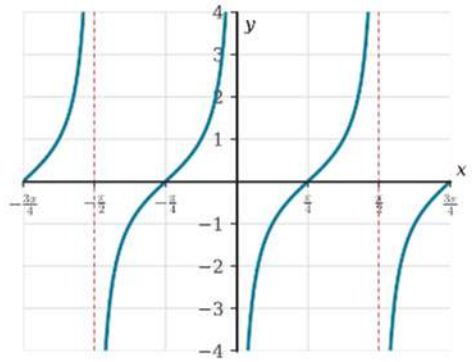
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74 Book #10

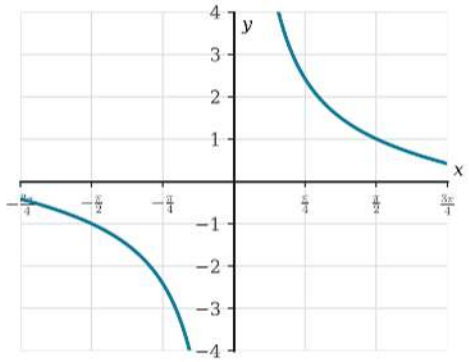
$y = \cot 2x$

Which graph represents the function?

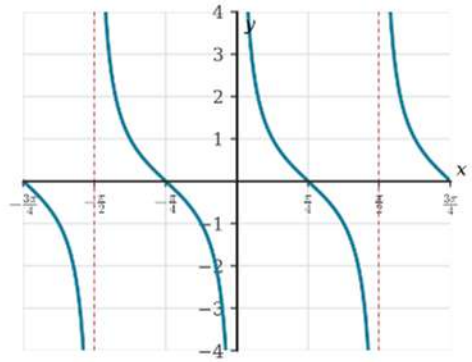
(A)



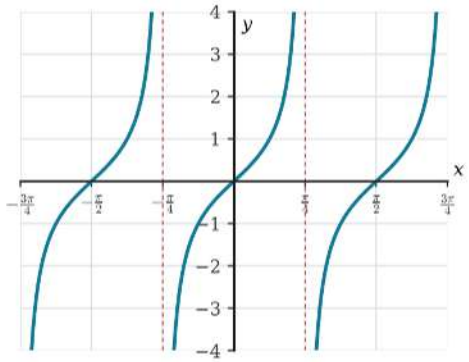
(B)



(C)



(D)



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75 Book #10

$y = \cot 2x$

Find the period and the equations of the vertical asymptotes.

(A) Period $\frac{\pi}{2}$; $x = \frac{\pi}{2}n,\ n \in \mathbb{Z}$

(B) Period π; $x = \frac{\pi}{2}n,\ n \in \mathbb{Z}$

(C) Period $\frac{\pi}{2}$; $x = \frac{\pi}{4}(2n+1),\ n \in \mathbb{Z}$

(D) Period 2π; $x = 2\pi n,\ n \in \mathbb{Z}$

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76 Book #10

$y = \cot 2x$

Find the *x*-intercepts of this cotangent function.

(A) x-intercepts: 0°, 45°, 90° ...; (multiples of 45°).

(B) x-intercepts: 0°, 90°, 180° ...; (multiples of 90°).

(C) x-intercepts: 22.5°, 67.5°, 112.5° ...; (odd multiples of 22.5°).

(D) x-intercepts: 45°, 135°, 225° ...; (odd multiples of 45°).

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77 Book #11

$y = \cot \frac{1}{2}x$

Find the period and the equations of the vertical asymptotes.

(A) Period $\frac{\pi}{2}$; $x = \frac{\pi}{2}n,\ n \in \mathbb{Z}$

(B) Period 2π; $x = 2\pi n,\ n \in \mathbb{Z}$

(C) Period 4π; $x = 2\pi n,\ n \in \mathbb{Z}$

(D) Period 2π; $x = \pi(2n+1),\ n \in \mathbb{Z}$

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78 Book #11

$y = \cot \frac{1}{2}x$

Find the *x*-intercepts of this cotangent function.

(A) x-intercepts: 90°, 270° ...; (odd multiples of 90°).

(B) x-intercepts: 180°, 540° ...; (odd multiples of 180°).

(C) x-intercepts: 0°, 360°, 720° ...; (multiples of 360°).

(D) x-intercepts: 0°, 180°, 360° ...; (multiples of 180°).

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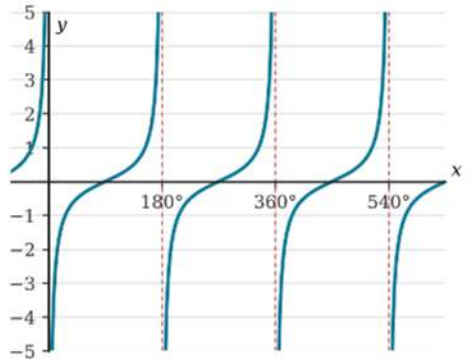
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79 Book #12

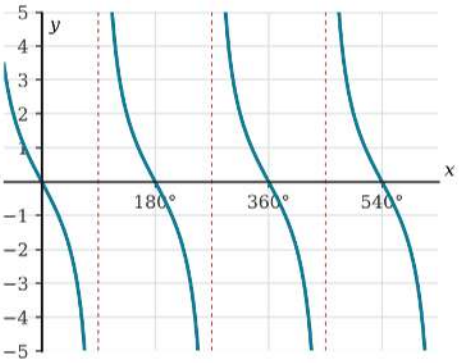
$y = -2 \cot x$

Which graph represents the function?

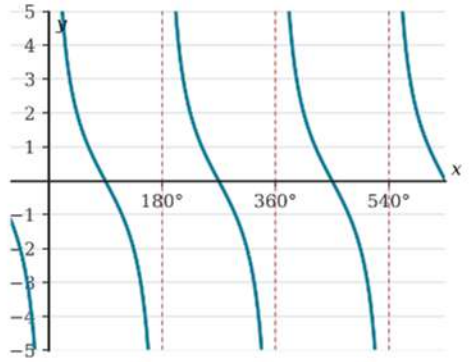
(A)



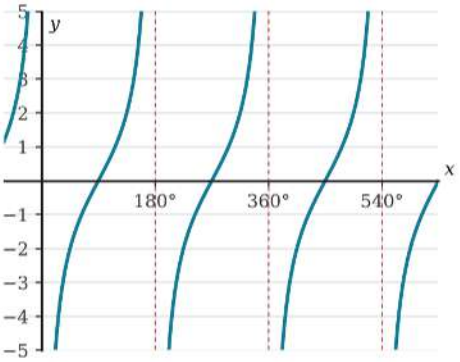
(B)



(C)



(D)



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80 Book #12

$y = -2\cot x$

Find the period and the equations of the vertical asymptotes.

(A) Period 2π; $x = \pi n,\ n \in \mathbb{Z}$

(B) Period π; $x = \frac{\pi}{2}(2n+1),\ n \in \mathbb{Z}$

(C) Period π; $x = \pi n,\ n \in \mathbb{Z}$

(D) Period $\frac{\pi}{2}$; $x = \frac{\pi}{2} n,\ n \in \mathbb{Z}$

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81 Book #12

$y = -2\cot x$

Find the *x*-intercepts of this cotangent function.

(A) x-intercepts: 0°, 180°, 360° ...; (multiples of 180°).

(B) x-intercepts: 0°, 90°, 180° ...; (multiples of 90°).

(C) x-intercepts: 90°, 270° ...; (odd multiples of 90°).

(D) x-intercepts: 45°, 135° ...; (odd multiples of 45°).

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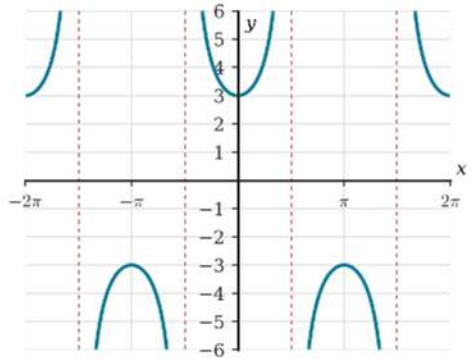
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82 Book #13

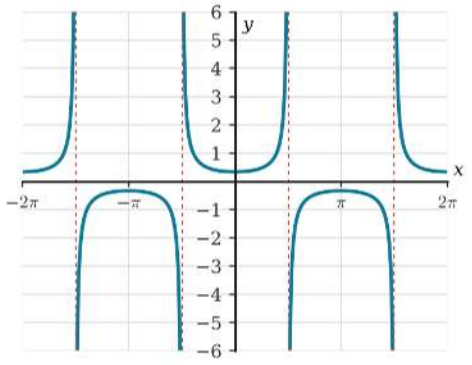
$y = 3\sec x$

Which graph represents the function?

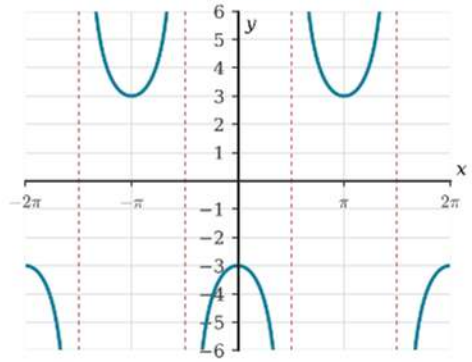
(A)



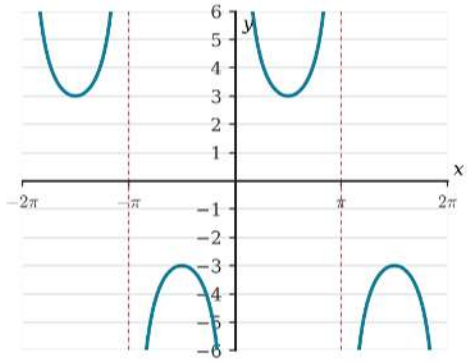
(B)



(C)



(D)



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83 Book #13

$y = 3\sec x$

Find the period and the equations of the vertical asymptotes.

(A) Period 2π; $x = \dfrac{\pi}{2}(2n+1),\ n \in \mathbb{Z}$

(B) Period 2π; $x = \pi n,\ n \in \mathbb{Z}$

(C) Period 4π; $x = \pi(2n+1),\ n \in \mathbb{Z}$

(D) Period π; $x = \dfrac{\pi}{2}(2n+1),\ n \in \mathbb{Z}$

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84 Book #14

$y = \sec \frac{1}{3}x$

Find the period and the equations of the vertical asymptotes.

(A) period = 1080°; asymptotes: $x = 270 + 540n$, where n is an integer

(B) period = 1080°; asymptotes: $x = 540n$, where n is an integer

(C) period = 540°; asymptotes: $x = 270 + 540n$, where n is an integer

(D) period = 120°; asymptotes: $x = 30 + 60n$, where n is an integer

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85 Book #15

$y = \sec 4x$

Find the period and the equations of the vertical asymptotes.

(A) Period $\frac{\pi}{4}$; $x = \frac{\pi}{8}(2n+1)$, $n \in \mathbb{Z}$

(B) Period $\frac{\pi}{2}$; $x = \frac{\pi}{4}n$, $n \in \mathbb{Z}$

(C) Period $\frac{\pi}{2}$; $x = \frac{\pi}{8}(2n+1)$, $n \in \mathbb{Z}$

(D) Period 8π; $x = 2\pi(2n+1)$, $n \in \mathbb{Z}$

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Q	LEARNING OUTCOME	REVEAL (ENGLISH)	PAGE
Q20	Find values of angle measures by using inverse trigonometric functions.	(1-9)	475

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Find each value. Write angle measures in degrees and radians.

86 Book #1

$\cos^{-1}\left(\frac{\sqrt{3}}{2}\right)$

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(A) 30° or $\frac{\pi}{6}$

(B) 60° or $\frac{\pi}{3}$

(C) 150° or $\frac{5\pi}{6}$

(D) 45° or $\frac{\pi}{4}$

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87 Book #2

$\sin^{-1}\left(-\frac{\sqrt{3}}{2}\right)$

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(A) 60° or $\frac{\pi}{3}$

(B) -60° or $-\frac{\pi}{3}$

(C) 240° or $\frac{4\pi}{3}$

(D) -30° or $-\frac{\pi}{6}$

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88 Book #3

$\text{Arccos}\left(-\frac{1}{2}\right)$

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(A) 150° or $\frac{5\pi}{6}$

(B) 120° or $\frac{2\pi}{3}$

(C) 60° or $\frac{\pi}{3}$

(D) 240° or $\frac{4\pi}{3}$

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89 Book #4

Arctan $\sqrt{3}$

(A) $-60°$ or $-\frac{\pi}{3}$

(B) $30°$ or $\frac{\pi}{6}$

(C) $60°$ or $\frac{\pi}{3}$

(D) $120°$ or $\frac{2\pi}{3}$

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90 Book #5

Arccos $\left(-\frac{\sqrt{2}}{2}\right)$

(A) $45°$ or $\frac{\pi}{4}$

(B) $225°$ or $\frac{5\pi}{4}$

(C) $120°$ or $\frac{2\pi}{3}$

(D) $135°$ or $\frac{3\pi}{4}$

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91 Book #6

$\tan^{-1}(-1)$

(A) $-45°$ or $-\frac{\pi}{4}$

(B) $45°$ or $\frac{\pi}{4}$

(C) $315°$ or $\frac{7\pi}{4}$

(D) $135°$ or $\frac{3\pi}{4}$

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92 Book #7 $\sin^{-1}\frac{\sqrt{2}}{2}$

(A) 135° or $\frac{3\pi}{4}$

(B) 45° or $\frac{\pi}{4}$

(C) 30° or $\frac{\pi}{6}$

(D) 60° or $\frac{\pi}{3}$

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93 Book #8 $\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)$

(A) 120° or $\frac{2\pi}{3}$

(B) 150° or $\frac{5\pi}{6}$

(C) 210° or $\frac{7\pi}{6}$

(D) 30° or $\frac{\pi}{6}$

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94 Book #9 Arcsin 1

(A) 90° or $\frac{\pi}{2}$

(B) 0° or 0

(C) 180° or π

(D) -90° or $-\frac{\pi}{2}$

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Q	LEARNING OUTCOME	REVEAL (ENGLISH)	PAGE
Q21	Evaluate expressions involving the natural base and natural logarithm.	(10 - 12)	237

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1

Book #10

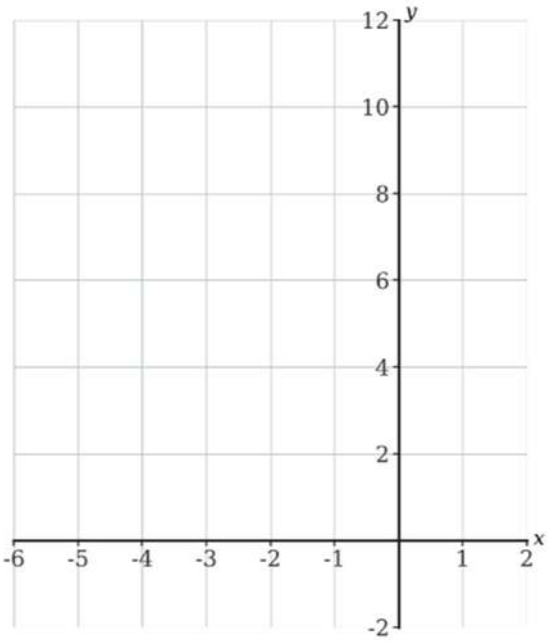
Consider the function $f(x) = 3e^{x-1} + 3$.

a. Graph the function.

b. Determine domain and range.

c. Find the average rate of change over the interval $[-5, -2]$.

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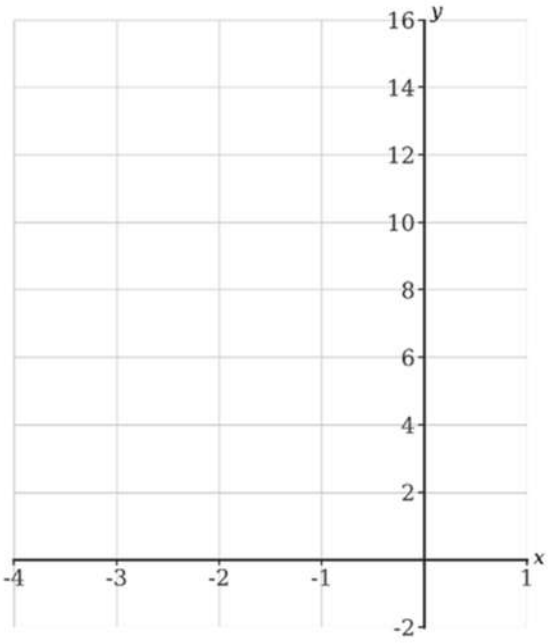
Book #11

Consider the function $f(x) = 4e^{2x} - 1$.

a. Graph the function.

b. Determine domain and range.

c. Find the average rate of change over the interval $[-3, -1]$.



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3

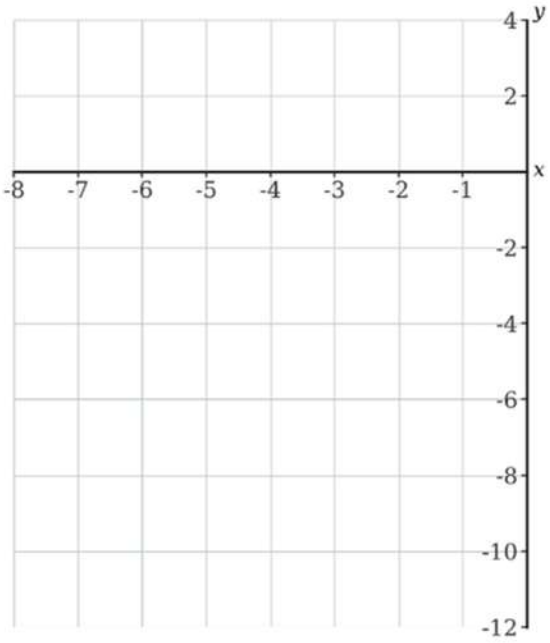
Book #12

Consider the function $f(x) = -2e^{x+3} + 2$.

a. Graph the function.

b. Determine domain and range.

c. Find the average rate of change over the interval $[-7, -4]$.



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Q	LEARNING OUTCOME	REVEAL (ENGLISH)	PAGE
Q22	Use logarithms to solve problems involving exponential growth and decay.	Example 2	297

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4 **SCIENCE** The half-life of a radioactive substance is the time it takes for half of the atoms of the substance to disintegrate. The radioactive substance Thorium-230 is used to determine the ages of cave formations and coral. The half-life of Thorium-230 is 75,381 years.



Part A

Determine the value of k and the equation of decay for Thorium-230.

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5 **Part B**

How much of a 2-gram sample of Thorium-230 should be left after 1500 years?

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Q	LEARNING OUTCOME	REVEAL (ENGLISH)	PAGE
Q23	Graph rational functions with oblique asymptotes and point discontinuity.	Example 4 (11-16)	341 344

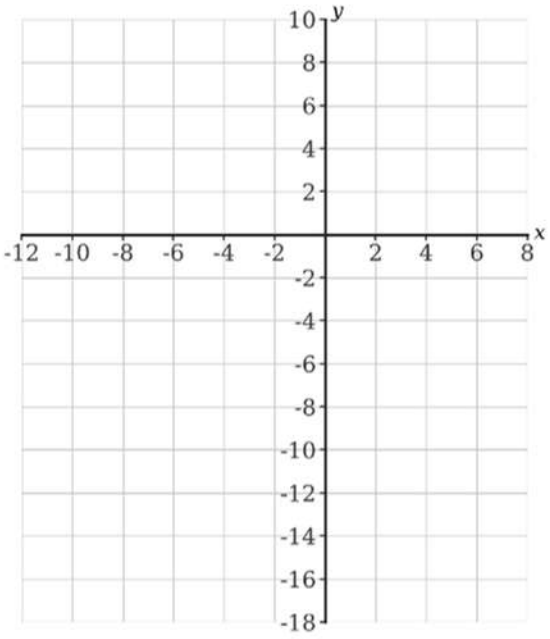
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6 Consider $f(x) = \dfrac{x^2 + 2x + 1}{x + 4}$.

Part A Find the zeros.

Part B Find the asymptotes.

Part C Graph $f(x) = \dfrac{x^2 + 2x + 1}{x + 4}$.



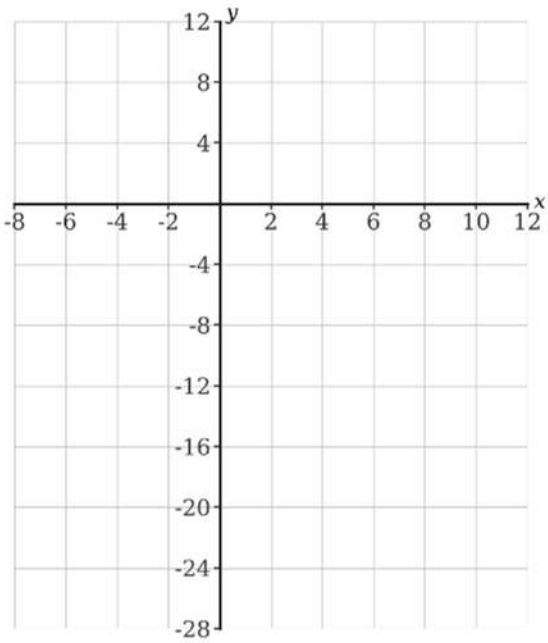
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7 Book #11

Consider the function $f(x) = \dfrac{(x-4)^2}{x+2}$.

Find the zeros and asymptotes of the function. Then graph the function.



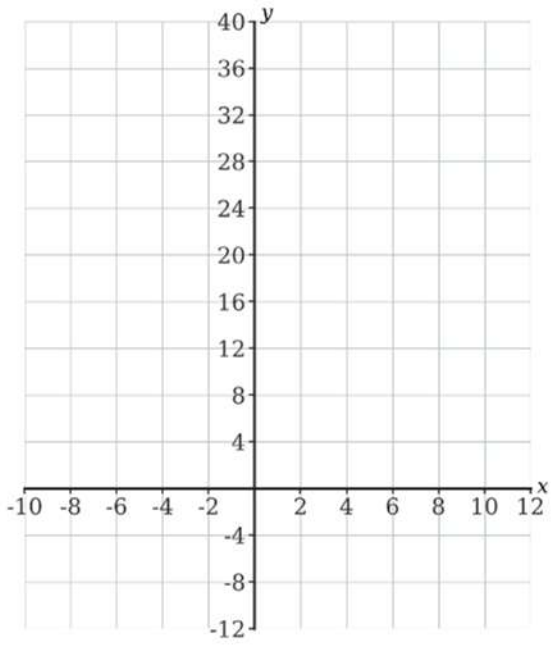
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8 Book #12

Consider the function $f(x) = \dfrac{(x+3)^2}{x-5}$.

Find the zeros and asymptotes of the function. Then graph the function.



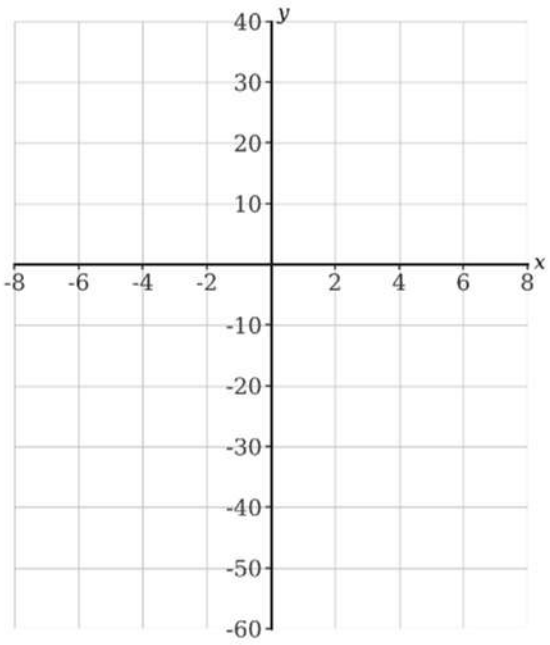
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9 Book #13

Consider the function $f(x) = \dfrac{6x^2 + 4x + 2}{x + 2}$.

Find the zeros and asymptotes of the function. Then graph the function.



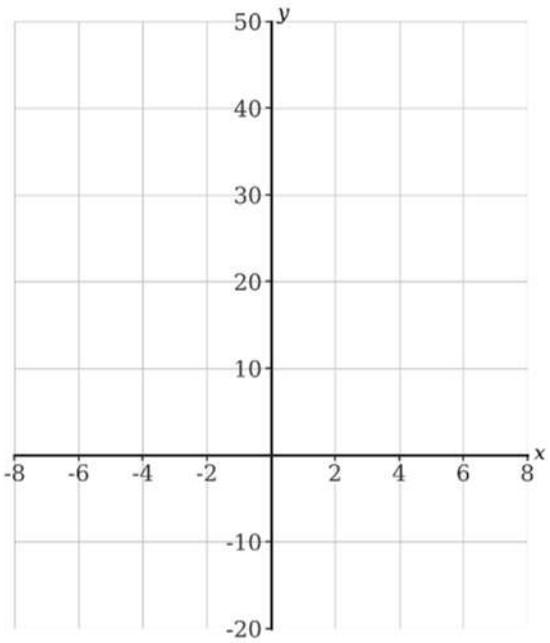
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10 Book #14

Consider the function $f(x) = \dfrac{2x^2 + 7x}{x - 2}$.

Find the zeros and asymptotes of the function. Then graph the function.



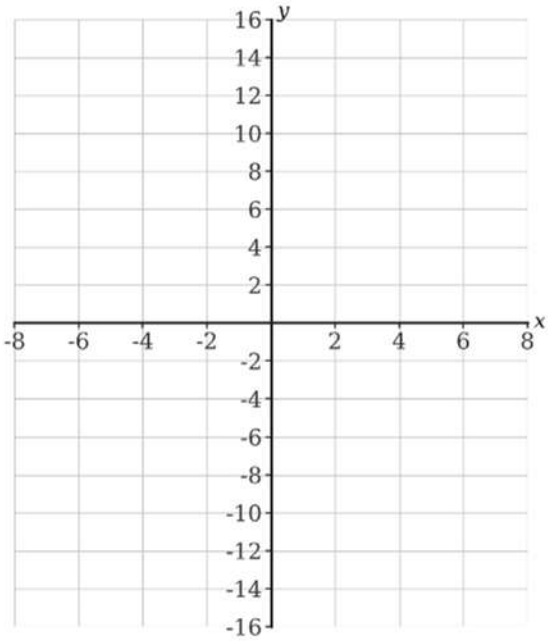
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11 Book #15

Consider the function $f(x) = \dfrac{3x^2 + 8}{2x - 1}$.

Find the zeros and asymptotes of the function. Then graph the function.



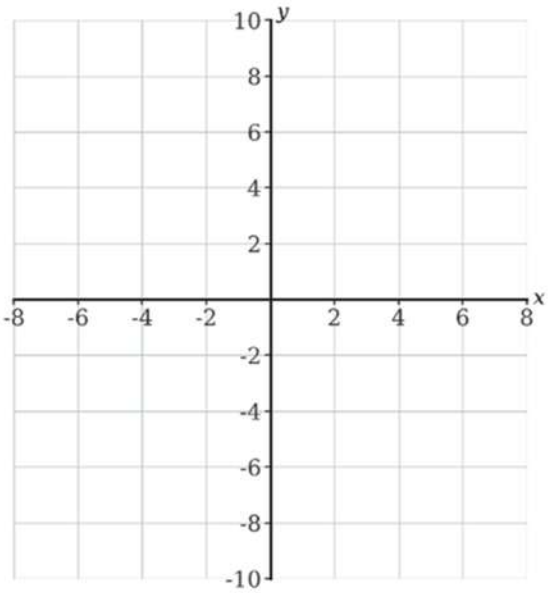
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12 Book #16

Consider the function $f(x) = \dfrac{2x^2 + 5}{3x + 4}$.

Find the zeros and asymptotes of the function. Then graph the function.



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Q	LEARNING OUTCOME		REVEAL (ENGLISH)	PAGE
Q24	(a) Find the area under normal distribution curves. (b) Find probabilities for normal distributions and find data values given probabilities.	(The table will be provided in the question)	Example 5 14 Example 8	397 402 400

13 A normal distribution has a mean of 42 and a standard deviation of 6.

a. Find the range of values that represents the middle 95% of the distribution.

b. What percent of the data will be greater than 36?

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14 Book #14

TESTING The scores on a test administered to prospective employees are normally distributed with a mean of 100 and a standard deviation of 12.3.

a. What percent of the scores are between 70 and 80?

b. What percent of the scores are over 115?

c. If 75 people take the test, how many would you expect to score lower than 75?

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15 **INTERNET TRAFFIC** The number of daily hits to a local news Web site is normally distributed with $\mu = 98{,}452$ hits and $\sigma = 10{,}325$ hits. Find the probability that the Web site will get at least 100,000 hits on a given day, $P(X > 100{,}000)$.

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Q	LEARNING OUTCOME		REVEAL (ENGLISH)	PAGE
Q25	(a) Convert between degrees and radian measures and find arc lengths by using central angles. (b) Graph horizontal translations of trigonometric functions.	(No need for graphing calculator)	Example 6 (52, 53) (7-12)	420 422 469

16 **TRAFFIC** A traffic circle, or roundabout, is a circular roadway at the intersection of two or more streets that allows cars to travel through more continuously than a traffic light or stop sign. The diameter of a traffic circle is 160 feet. How far does a car travel in the roundabout if it goes three-fourths of the way around?

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17 Book #52

TRANSPORTATION A traffic roundabout has a diameter of 200 meters. How far does an automobile travel in the roundabout if it goes one-fourth of the way around?

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18 Book #53

ANALOG CLOCKS The length of the minute hand of an analog clock is 5 inches. If the minute hand rotates from 12 noon to 12:40 P.M., then how far does its point move?

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19 Book #7

State the amplitude, period, and phase shift for each function. Then graph the function and state the domain and range.

$y = 3\cos(\theta - 45^\circ)$

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20 Book #8

$y = 2\sin(\theta + 60°)$

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21 Book #9

$y = \frac{1}{2}\sin 3\left(\theta - \frac{\pi}{3}\right)$

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22 $y = \frac{1}{2}\cos 3\left(\theta - \frac{\pi}{2}\right)$

Book #10

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23 $y = 2\cos(\theta + 90°)$

Book #11

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24 $y = \frac{1}{4}\sin(\theta - 30^\circ)$

Book #12

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