

سلسلة الطارق في الرياضيات - Reveal



تم تحميل هذا الملف من موقع المناهج الإماراتية

موقع المناهج ← المناهج الإماراتية ← الصف العاشر المتقدم ← رياضيات ← الفصل الثالث ← ملفات متنوعة ← الملف

تاريخ إضافة الملف على موقع المناهج: 00:22:31 2026-06-22

ملفات اكتب للمعلم اكتب 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

المزيد من مادة
رياضيات:

إعداد: طارق علي

التواصل الاجتماعي بحسب الصف العاشر المتقدم



صفحة المناهج
الإماراتية على
فيسبوك

الرياضيات

اللغة الانجليزية

اللغة العربية

التربية الاسلامية

المواد على تلغرام

المزيد من الملفات بحسب الصف العاشر المتقدم والمادة رياضيات في الفصل الثالث

إجابة مراجعة نهاية الفصل 2026م

1

مراجعة نهاية الفصل 2026م غير محلول

2

ملزمة هيكل ريفيل

3

ملزمة هيكل الصف العاشر المتقدم

4

مراجعة هيكل الامتحان النهائي غير محلول

5

الطارق

الرياضيات

هيكل 10 متقدم ريفيل 2026

منطقة طارق أكاديمي للرياضيات

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مر ف عاشر (متقدم) **Reveal**

الطارق

أستاذ الرياضيات

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Q1-MCQ 1-1Q27-Q32**Question 1: Finding the y -intercept**

In exercise 27, for the function $f(x) = 2x^2 - 6x - 9$, what is the y -intercept of the graph?

- a) $(0, 2)$
- b) $(0, -6)$
- ☒ c) $(0, -9)$
- d) $(0, 9)$

↓
 y -intercept = -9
 and put $x = 0$
 $(0, -9)$

Question 2: Equation of the Axis of Symmetry

29, $f(x) = -4x^2 + 5x$

$$x = \frac{-b}{2a}$$

- ☒ a) $x = 0.625$
- b) $x = -0.625$
- c) $x = 1.25$
- d) $x = 5$

$$= \frac{-5}{2(-4)} = 0.625$$

Question 3: Identifying the Vertex Direction

28. $f(x) = -3x^2 - 9x + 2$

$a = -3 \rightarrow$ Negative

- a) Opens upward; Minimum
- ☒ b) Opens downward; Maximum
- c) Opens upward; Maximum
- d) Opens downward; Minimum

① down ward

② maximum

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In exercise 30, for the function $f(x) = 2x^2 + 11x$, what is the x -coordinate of the vertex?

a) $x = -5.5$

b) $x = 2.75$

✓ c) $x = -2.75$

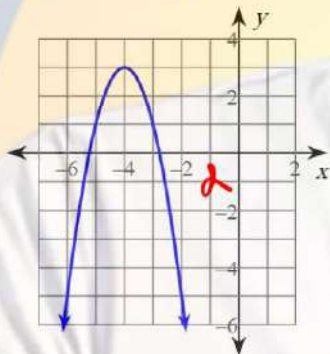
d) $x = 0$

$$x = \text{axis of symmetry} = \frac{-b}{2a}$$

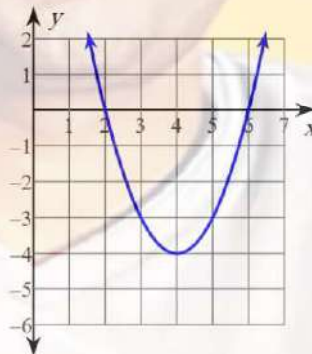
$$x = \frac{-11}{2(2)} = -2.75$$

$$y = x^2 - 4x + 2 \rightarrow y\text{-intercept}$$

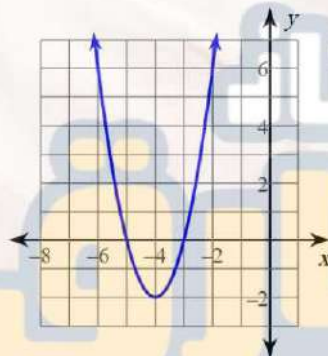
A)



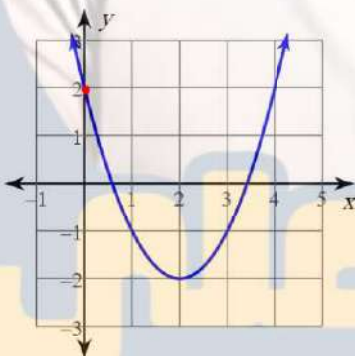
B)



D)



✓ C)



في الرياضيات



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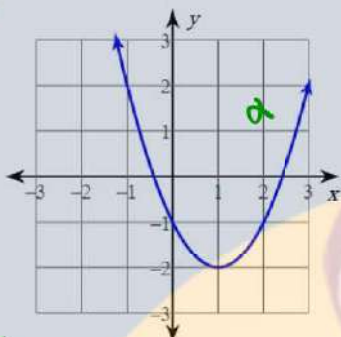
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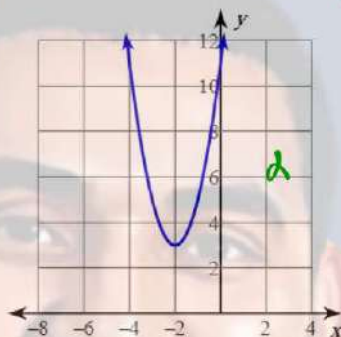


$$y = -x^2 + 2x - 2 \rightarrow \text{y-intercept}$$

A)

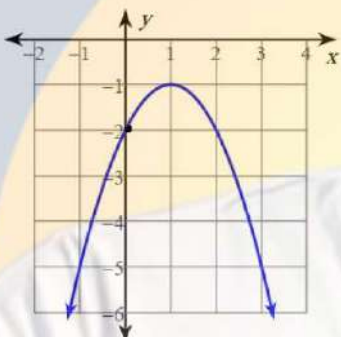


B)

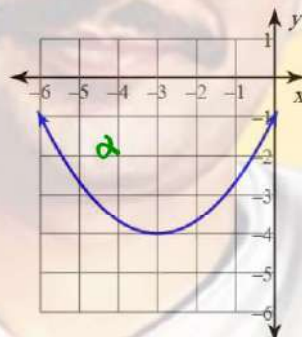


a (-) ∩

C)

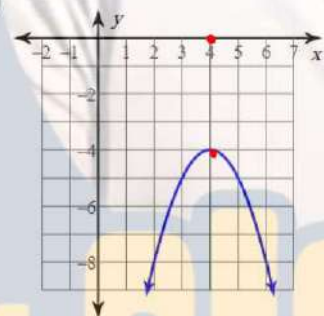


D)

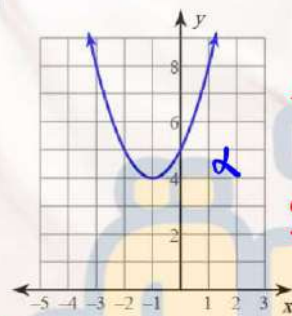


$$y = -2x^2 + 16x - 31$$

A)



B)

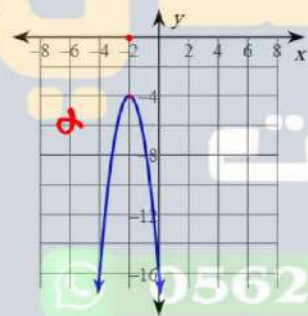


a (-) → ∩

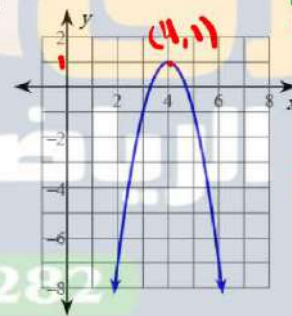
$$\text{Vertex} = \frac{-b}{2a}$$

$$x = \frac{-16}{2(-2)} = 4$$

C)



D)



$$y = F(4) = -2(4)^2 + 16(4) - 31 = 1$$

$$\text{Vertex} = (4, 1)$$

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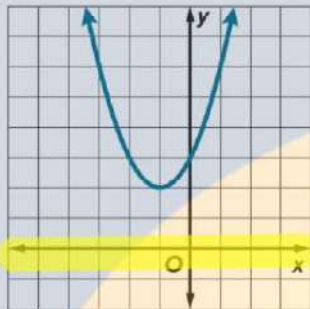
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Q2-MCQ 1-2

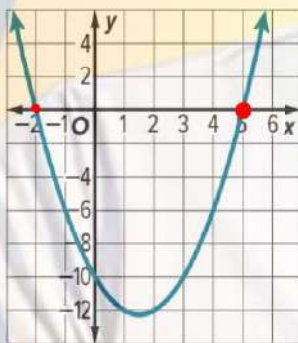
Use the related graph of each equation to determine its solutions.

1. $x^2 + 2x + 3 = 0$



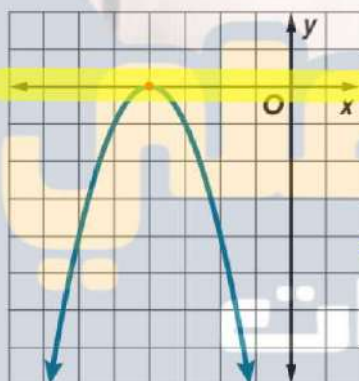
- a) It has two solutions because it opens upward.
- ☒ b) It has no real solutions because the graph does not cross the x -axis.
- c) It has one solution because it crosses the y -axis.
- d) It has infinitely many solutions.

2. $x^2 - 3x - 10 = 0$



- ☒ a) It has two solutions $x = -2, x = 5$
- b) It has no real solutions because the graph does not cross the x -axis.
- c) It has one solution
- d) It has infinitely many solutions.

3. $-x^2 - 8x - 16 = 0$



- a) It has two solutions because it opens upward.
- b) It has no real solutions because the graph does not cross the x -axis.
- ☒ c) It has one solution $x = -4$
- d) It has infinitely many solutions.

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Q3-MCQ 1-3

Simplify.

mode $\rightarrow$ ComplexIn exercise 29, what is the simplified form of $(6 - 3i) + (4 - 2i)$?

- a) $10 - 5i$
- b) $2 - i$
- c) $10 - i$
- d) $2 - 5i$

In exercise 30, simplify $(-11 + 4i) - (1 - 5i)$.

- a) $-12 - i$
- b) $-10 + 9i$
- c) $-12 + 9i$
- d) $-10 - i$

exercise 31, $(2 + i)(3 - i)$,

- a) $6 - 2i + 3i - i^2 = 6 - 2i + 3i - (-1) = 7 + i$
- b) $6 + 2i - 3i + i^2 = 7 + i$
- c) $5 + i$
- d) $6 - i^2$

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exercise 32: $(5 - 2i)(4 - i)$? Choose 2 answer.

☒ a) $18 - 13i$

b) $22 - 13i$

☒ c) $20 - 13i + 2i^2 = 20 - 13i + 2(-1)$

d) $18 + 3i = 20 - 13i - 2 = 18 - 13i$

Q4-MCQ 1-3

Q7-Q12

$\sqrt{-23} \cdot \sqrt{-46} = -23\sqrt{2} \quad i^2 = -1$

a) $\sqrt{1058}$ ✗

☒ b) $i\sqrt{23} \cdot i\sqrt{46} \rightarrow i^2 = -1 = -23\sqrt{2}$

c) $-i\sqrt{23 \cdot 46}$ ✗

d) $23i\sqrt{2}$ ✗

What is the fully simplified form of $\sqrt{-6} \cdot \sqrt{-3}$? $= -3\sqrt{2}$

a) $3\sqrt{2}$

b) $i\sqrt{18}$

☒ c) $-3\sqrt{2}$

d) -18

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In exercise 9, the product $\sqrt{-5} \cdot \sqrt{-10}$
final answer?

- ☒ a) $-5\sqrt{2}$
- b) $5\sqrt{2}$
- c) -50
- d) $5i\sqrt{2}$

In exercise 10, what is the product of $(3i)(-2i)(5i)$?

- ☒ a) $30i$
- b) $-30i$
- c) 30
- d) -30

Exercise 11 asks to simplify i^{11}
equivalent to i^{11} ?

- a) i
- b) -1
- ☒ c) $-i$
- d) 1

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In exercise 12, what is the value of the term $(-6i)^2$

a) 36

✓ b) -36

c) $36i$ d) $-36i^2$

Q5-MCQ 1-5

Find the value of c that makes each trinomial a perfect square. Then write the trinomial as a perfect square trinomial.

19. $x^2 + 10x + c$

$$c = \left(\frac{b}{2}\right)^2 = \left(\frac{10}{2}\right)^2 = (5)^2 = 25$$

A) 10

B) 20

✓ C) 25

D) 100

* write perfect square

$$(x + 5)^2$$

20. $x^2 - 14x + c$ write the trinomial as the square

$$c = \left(\frac{-14}{2}\right)^2 = (-7)^2 = 49$$

A) $(x - 14)^2$

✓ B) $(x - 7)^2$

C) $(x + 7)^2$

D) $(x - 49)^2$

$$(x - 7)^2$$

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Find the value of c that makes the trinomial $x^2 + 5x + c$ a perfect square, and write the trinomial as a binomial squared.

a) $c = \frac{25}{2}; (x + \frac{5}{2})^2$

b) $c = 25; (x + 5)^2$

c) $c = \frac{25}{4}; (x + \frac{5}{2})^2$

d) $c = \frac{5}{2}; (x + \frac{25}{4})^2$

$$* c = \left(\frac{b}{2}\right)^2 = \left(\frac{5}{2}\right)^2 = \frac{25}{4}$$

$$* \text{Perfect } (x + \frac{5}{2})^2$$

Find the value of c that makes the trinomial $x^2 - x + c$ a perfect square, and write the trinomial as a binomial squared.

a) $c = \frac{1}{4}; (x - \frac{1}{2})^2$

b) $c = \frac{1}{2}; (x - \frac{1}{2})^2$

c) $c = 1; (x - 1)^2$

d) $c = \frac{1}{4}; (x + \frac{1}{2})^2$

$$* c = \left(\frac{-1}{2}\right)^2 = \frac{1}{4}$$

$$* \text{Perfect } (x - \frac{1}{2})^2$$

Find the value of c that makes the trinomial $x^2 - 9x + c$ a perfect square, and write the trinomial as a binomial squared.

a) $c = \frac{81}{4}; (x - \frac{9}{2})^2$

b) $c = \frac{9}{2}; (x - \frac{9}{2})^2$

c) $c = \frac{81}{4}; (x + \frac{9}{2})^2$

d) $c = 81; (x - 9)^2$

$$* c = \left(\frac{-9}{2}\right)^2 = \frac{81}{4}$$

$$* \text{Perfect } (x - \frac{9}{2})^2$$

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Q6-MCQ 1-6

Question 1 (Based on #24)

Find the value of the discriminant for the quadratic equation $x^2 - 8x + 16 = 0$, and describe the number and type of roots.

$$a=1, b=-8, c=16$$

$$D = b^2 - 4ac$$

$$b^2 - 4ac = (-8)^2 - 4(1)(16) = 0$$

a) $D = -128$; two complex roots

☒ b) $D = 0$; one real, rational root

c) $D = 64$; two real, rational roots

d) $D = 0$; two real, irrational roots

Question 2 (Based on #25)

Find the value of the discriminant for the quadratic equation $x^2 - 11x - 26 = 0$, and describe the number and type of roots.

$$a \quad b \quad c$$

$$b^2 - 4ac = (-11)^2 - 4(1)(-26) = 225$$

☒ a) $D = 225$; two real, rational roots

b) $D = 17$; two real, irrational roots

c) $D = -17$; two complex roots

d) $D = 225$; one real, rational root

$$\text{if } \sqrt{225} = 15 \text{ rational}$$

Question 3 (Based on #26)

Find the value of the discriminant for the quadratic equation $3x^2 - 2x = 0$, and describe the number and type of roots.

$$a \quad b \quad c=0$$

$$b^2 - 4ac = (-2)^2 - 4(3)(0) = 4$$

a) $D = -4$; two complex roots

b) $D = 0$; one real, rational root

☒ c) $D = 4$; two real, rational roots

d) $D = 4$; two real, irrational roots

$$\sqrt{4} = 2 \text{ rational}$$

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Question 5 (Based on #28)



Find the value of the discriminant for the quadratic equation $5x^2 - 6 = 0$, and describe the number and type of roots.

a) $D = 120$; two real, irrational roots

b) $D = -120$; two complex roots

c) $D = 120$; two real, rational roots

d) $D = 0$; one real, rational root

$$b^2 - 4ac = (0)^2 - 4(5)(-6)$$

$$= 120$$

$$\sqrt{120} = 3.4 \text{ irrational}$$

Question 7 (Based on #30)

Find the value of the discriminant for the quadratic equation $x^2 + 8x + 13 = 0$, and describe the number and type of roots.

a) $D = 116$; two real, rational roots

b) $D = 12$; two real, irrational roots

c) $D = -12$; two complex roots

d) $D = 12$; two real, rational roots

$$b^2 - 4ac = (8)^2 - 4(1)(13)$$

$$= 12 \quad (+)$$

$$\sqrt{12} = 3.46 \text{ irrational}$$

$$D = b^2 - 4ac$$

* $D = 0$ one real solution

* $D (+) < 1$ if $\sqrt{D}$ is rational
if $\sqrt{D}$ is decimal 2 irrational

* $D (-)$ 2 complex solution

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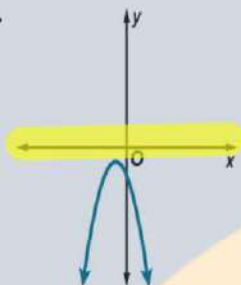
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REGULARITY Describe the discriminant of the related equation of each graph. Then determine the type and number of roots.

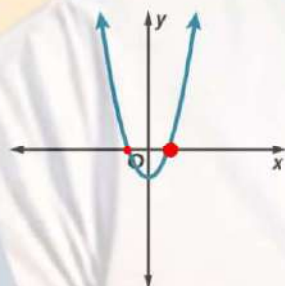
36.

a) The discriminant is positive ($D > 0$); two real roots.b) The discriminant is zero ($D = 0$); one real root.c) The discriminant is negative ($D < 0$); two complex roots.d) The discriminant is negative ($D < 0$); one real root.

No solution $\rightarrow$ Complex (c)

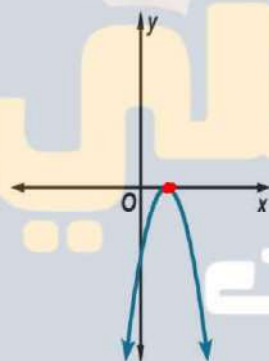
REGULARITY Describe the discriminant of the related equation of each graph. Then determine the type and number of roots.

37.

a) The discriminant is positive ($D > 0$); two real roots.b) The discriminant is zero ($D = 0$); one real root.c) The discriminant is negative ($D < 0$); two complex roots.d) The discriminant is negative ($D < 0$); one real root.

REGULARITY Describe the discriminant of the related equation of each graph. Then determine the type and number of roots.

38.

a) The discriminant is positive ($D > 0$); two real roots.b) The discriminant is zero ($D = 0$); one real root.c) The discriminant is negative ($D < 0$); two complex roots.d) The discriminant is negative ($D < 0$); one real root.

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Q7-MCQ 1-7

Question 1 (Based on #13)

Solve the quadratic inequality by graphing:

$$x^2 - 6x + 9 \leq 0$$

☒ a) $x = 3$

b) No solution

c) All real numbers

d) $x \leq 3$

Mode $\rightarrow$ inequality $\rightarrow 2 \rightarrow$

$$-x^2 - 4x + 32 \geq 0$$

a) $x \leq -8$ or $x \geq 4$

b) $-4 \leq x \leq 8$

☒ c) $-8 \leq x \leq 4$

d) No solution

mode $\rightarrow$ inequality $\rightarrow 2 \rightarrow \geq 0$

$$x^2 - x - 6 \leq 0$$

a) $x \leq -2$ or $x \geq 3$

☒ b) $-2 \leq x \leq 3$

c) $-3 \leq x \leq 2$

d) $x \leq -3$ or $x \geq 2$

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$$x^2 + 8x + 16 \geq 0$$

mode $\rightarrow$ inequality $\rightarrow 2 \rightarrow \geq 0$

a) $x = -4$

b) All real numbers except $x = -4$

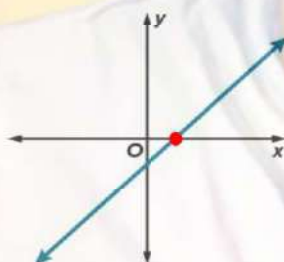
✓ c) All real numbers

d) No solution

Q8-MCQ 2-1

Use the graph to state the number of real zeros of the function.

15.



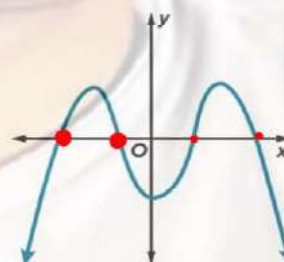
a. 0

✓ b. 1

c. 2

d. 3

16.



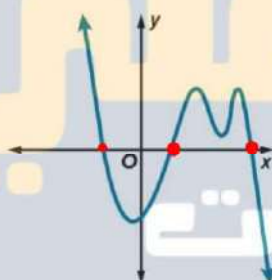
✓ a. 4

b. 1

c. 2

d. 3

17.



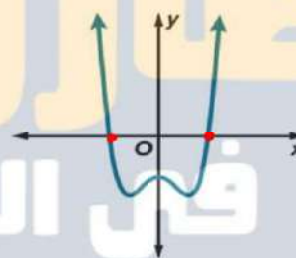
a. 4

b. 1

c. 2

✓ d. 3

18.



a. 4

b. 1

✓ c. 2

d. 3

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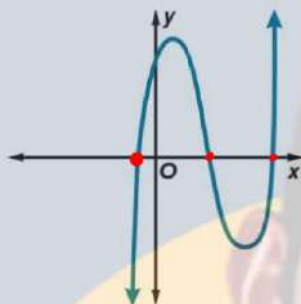
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19.



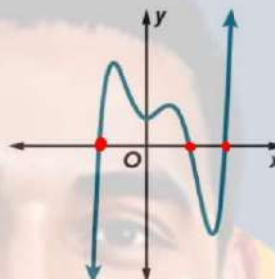
a. 4

b. 1

c. 2

~~d. 3~~

20.



a. 4

b. 1

c. 2

~~d. 3~~

Question 1 (Based on #23)

For the polynomial function $f(x) = -5x^4 + 3x^2$, state the degree, the leading coefficient, and describe its end behavior.

a) Degree: 4; Leading Coefficient: -5 ; End Behavior: $f(x) \rightarrow -\infty$ as $x \rightarrow -\infty$ and $f(x) \rightarrow -\infty$ as $x \rightarrow \infty$

b) Degree: 4; Leading Coefficient: -5 ; End Behavior: $f(x) \rightarrow \infty$ as $x \rightarrow -\infty$ and $f(x) \rightarrow -\infty$ as $x \rightarrow \infty$

c) Degree: 2; Leading Coefficient: 3; End Behavior: $f(x) \rightarrow \infty$ as $x \rightarrow -\infty$ and $f(x) \rightarrow \infty$ as $x \rightarrow \infty$

d) Degree: 4; Leading Coefficient: -5 ; End Behavior: $f(x) \rightarrow \infty$ as $x \rightarrow -\infty$ and $f(x) \rightarrow \infty$ as $x \rightarrow \infty$

$a +$, even

$a -$, even

$a +$, odd

$f(x) \rightarrow \infty$

$f(x) \rightarrow -\infty$

$f(x) \rightarrow \infty$

$a -$, odd

$f(x) \rightarrow \infty$

$f(x) \rightarrow -\infty$

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Question 2 (Based on #24)

For the polynomial function $g(x) = 2x^5 + 6x^4$, state the degree, the leading coefficient, and describe its end behavior.

a) Degree: 5; Leading Coefficient: 2; End Behavior: $g(x) \rightarrow \infty$ as $x \rightarrow -\infty$ and $g(x) \rightarrow \infty$ as $x \rightarrow \infty$

b) Degree: 4; Leading Coefficient: 6; End Behavior: $g(x) \rightarrow -\infty$ as $x \rightarrow -\infty$ and $g(x) \rightarrow \infty$ as $x \rightarrow \infty$

c) Degree: 5; Leading Coefficient: 2; End Behavior: $g(x) \rightarrow -\infty$ as $x \rightarrow -\infty$ and $g(x) \rightarrow \infty$ as $x \rightarrow \infty$

d) Degree: 5; Leading Coefficient: 2; End Behavior: $g(x) \rightarrow -\infty$ as $x \rightarrow -\infty$ and $g(x) \rightarrow -\infty$ as $x \rightarrow \infty$

Question 3 (Based on #25)

For the polynomial function $g(x) = 8x^4 + 5x^5$, identify the leading term to state the degree, the leading coefficient, and its end behavior.

a) Degree: 4; Leading Coefficient: 8; End Behavior: $g(x) \rightarrow \infty$ as $x \rightarrow -\infty$ and $g(x) \rightarrow \infty$ as $x \rightarrow \infty$

b) Degree: 5; Leading Coefficient: 5; End Behavior: $g(x) \rightarrow -\infty$ as $x \rightarrow -\infty$ and $g(x) \rightarrow \infty$ as $x \rightarrow \infty$

c) Degree: 5; Leading Coefficient: 5; End Behavior: $g(x) \rightarrow \infty$ as $x \rightarrow -\infty$ and $g(x) \rightarrow \infty$ as $x \rightarrow \infty$

d) Degree: 5; Leading Coefficient: 8; End Behavior: $g(x) \rightarrow -\infty$ as $x \rightarrow -\infty$ and $g(x) \rightarrow \infty$ as $x \rightarrow \infty$

Question 4 (Based on #26)

For the polynomial function $h(x) = 9x^6 - 5x^7 + 3x^2$, state the degree, the leading coefficient, and describe its end behavior.

a) Degree: 7; Leading Coefficient: -5; End Behavior: $h(x) \rightarrow \infty$ as $x \rightarrow -\infty$ and $h(x) \rightarrow -\infty$ as $x \rightarrow \infty$

b) Degree: 6; Leading Coefficient: 9; End Behavior: $h(x) \rightarrow \infty$ as $x \rightarrow -\infty$ and $h(x) \rightarrow \infty$ as $x \rightarrow \infty$

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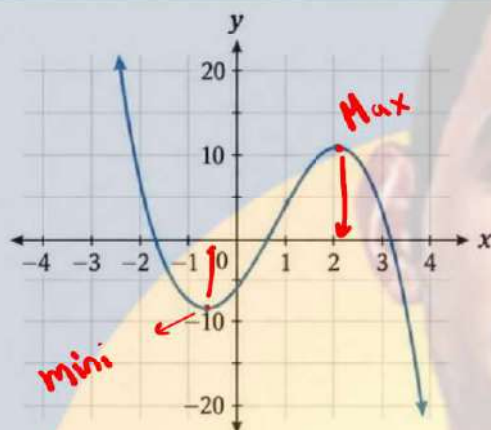
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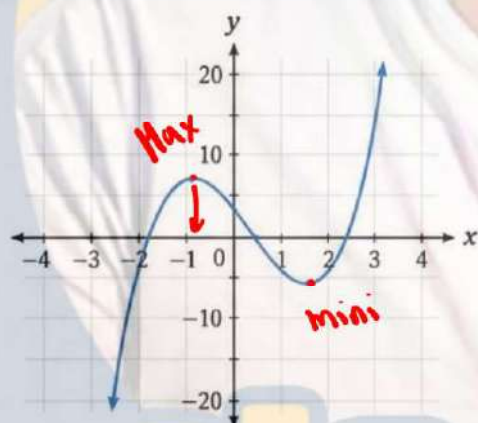
Q9-MCQ 2.2

5. $f(x) = -2x^3 + 12x^2 - 8x$



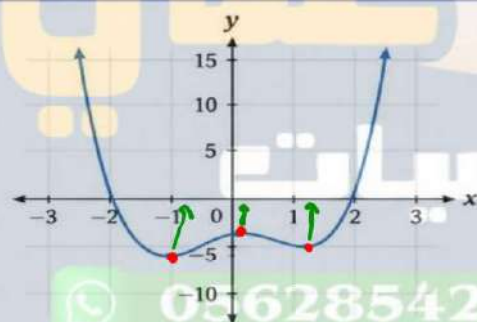
- | | |
|--|---|
| A. | Max at $x \approx -1$,
Min at $x \approx 2$ |
| B. | Max at $x \approx 1$,
Min at $x \approx -1$ |
| ☒ C. | Max at $x \approx 2$,
Min at $x \approx 0$ |
| D. | Max at $x \approx -2$,
Min at $x \approx 1$ |

6. $f(x) = 2x^3 - 4x^2 - 3x + 4$



- | | |
|--|---|
| ☒ A. | Max at $x \approx -1$,
Min at $x \approx 2$ |
| B. | Max at $x \approx -2$,
Min at $x \approx 1$ |
| C. | Max at $x \approx 1$,
Min at $x \approx -2$ |
| D. | Max at $x \approx 0$,
Min at $x \approx 2$ |

7. $f(x) = x^4 + 2x - 1$



- | | |
|--|---|
| A. | Max at $x \approx -1$,
Min at $x \approx 0.5$ |
| ☒ B. | Max at $x \approx 0.5$,
Min at $x \approx -1$ |
| C. | Max at $x \approx 0$,
Min at $x \approx -0.5$ |
| D. | Max at $x \approx -0.5$,
Min at $x \approx 1$ |

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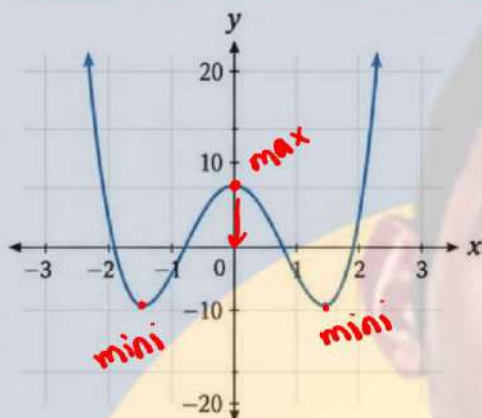
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8. $f(x) = x^4 + 8x^2 - 12$



A.

Max at $x \approx \pm 1$,
Min at $x \approx 0$

B.

Max at $x \approx 0$,
Min at $x \approx \pm 1$

C.

Max at $x \approx \pm 1.5$,
Min at $x \approx 0$ ☒ D.Max at $x \approx 0$,
Min at $x \approx \pm 1.5$ **Q10-MCQ 2.4**

Simplify using synthetic division.

11. $(3v^2 - 7v - 10)(v - 4)^{-1}$

A) $3v - 5 + \frac{10}{v-4}$

☒ B) $3v + 5 + \frac{10}{v-4}$

C) $3v + 5 - \frac{10}{v-4}$

D) $3v + 19 + \frac{66}{v-4}$

Handwritten synthetic division for $(3v^2 - 7v - 10) \div (v - 4)$:

4	3	-7	-10
	↓	12	20
	3	5	10

Handwritten notes: "قريب" (close), "3v + 5 + 10/(v-4)", "Remainder", and a box around 10.

12. $(3t^4 + 4t^3 - 32t^2 - 5t - 20)(t + 4)^{-1}$ Remainder is

A.2

B.3

☒ C.0

D.5

Handwritten synthetic division for $(3t^4 + 4t^3 - 32t^2 - 5t - 20) \div (t + 4)$:

-4	3	4	-32	-5	-20
	↓	-12	32	0	20
	3	-8	0	-5	0

Handwritten notes: "قريب" (close), "0", "remainder", and a box around 0.

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13. $\frac{y^3 + 6}{y + 2}$:

A. $y^2 + 2y + 4 - \frac{2}{y+2}$

B. $y^2 - 2y + 4 - \frac{2}{y+2}$

C. $y^2 - 2y + 4 + \frac{2}{y+2}$

D. $y^2 + 2y + 4 + \frac{2}{y+2}$

Handwritten solution for question 13:

$$\begin{array}{r|rrrr} 1 & 0 & 0 & 6 \\ -2 & \downarrow & -2 & 4 & -8 \end{array}$$

Handwritten result: $y^2 - 2y + 4 - \frac{2}{y+2}$

14. Simplify $\frac{2x^3 - x^2 - 18x + 32}{2x - 6}$.

A. $x^2 + \frac{5}{2}x - 1 + \frac{26}{2x-6}$

B. $x^2 - \frac{5}{2}x - 1 + \frac{26}{2x-6}$

C. $x^2 + \frac{5}{2}x + 1 + \frac{26}{2x-6}$

D. $x^2 + \frac{5}{2}x - \frac{3}{2} + \frac{23}{2x-6}$

Handwritten solution for question 14:

Handwritten result: $x^2 - \frac{1}{2}x^2 - 9x + 16$

$$\begin{array}{r|rrrr} 1 & -\frac{1}{2} & -9 & 16 \\ 3 & \downarrow & 3 & \frac{15}{2} & -\frac{9}{2} \end{array}$$

Handwritten result: $x^2 - \frac{5}{2}x - 1 + \frac{26}{2x-6}$

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**Q11-MCQ 2.4**

Simplify each expression.

$$1. \frac{15y^3 + 6y^2 + 3y}{3y} = \frac{15y^3}{3y} + \frac{6y^2}{3y} + \frac{3y}{3y}$$

$$= 5y^2 + 2y + 1$$

☒ A) $5y^2 + 2y + 1$

☐ B) $5y^3 + 2y^2 + 1$

☐ C) $5y^2 + 6y + 3$

☐ D) $15y^2 + 6y + 1$

Question 2

$$(4f^5 - 6f^4 + 12f^3 - 8f^2)(4f^2)^{-1} = ?$$

$$\frac{4f^5}{4f^2} - \frac{6f^4}{4f^2} + \frac{12f^3}{4f^2} - \frac{8f^2}{4f^2}$$

☒ A) $f^3 - (3/2)f^2 + 3f - 2$

☐ B) $f^3 - 6f^2 + 12f - 8$

☒ C) $4f^3 - 6f^2 + 12f - 8$

☐ D) $f^4 - (3/2)f^3 + 3f^2 - 2f$

Question 3

$$(6j^2k - 9jk^2) \div (3jk) = ?$$

$$\frac{6j^2k}{3jk} - \frac{9jk^2}{3jk}$$

☒ A) $2j - 3k$

☐ B) $3j - 3k$

☐ C) $2j^2 - 3k^2$

☐ D) $6j - 9k$

2j - 3k

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Question 4

$$(4a^2h^2 - 8a^3h + 3a^4) \div (2a^2) = ?$$

$$\frac{4a^2h^2}{2a^2} - \frac{8a^3h}{2a^2} + \frac{3a^4}{2a^2}$$

☒ A) $2h^2 - 4ah + (3/2)a^2$

☐ B) $4h^2 - 8ah + 3a^2$

☐ C) $2h^2 - 4a^2h + (3/2)a^2$

☐ D) $2ah^2 - 4a^2h + (3/2)a^3$

$$2h^2 - 4ah + \frac{3}{2}a^2$$

Q12-MCQ 2.5

Expand each binomial.

9. $(3x + 4y)^5$

☐ a) $243x^5 + 1620x^4y + 4320x^3y^2 + 5760x^2y^3 + 3840xy^4 + 512y^5$

☒ b) $243x^5 + 1620x^4y + 4320x^3y^2 + 5760x^2y^3 + 3840xy^4 + 1024y^5$

☐ c) $243x^5 + 810x^4y + 2160x^3y^2 + 2880x^2y^3 + 1920xy^4 + 1024y^5$

☐ d) $243x^5 + 1080x^4y + 2880x^3y^2 + 3840x^2y^3 + 2560xy^4 + 1024y^5$

$$\begin{aligned} & (3x)^5 + {}^5C_1 (3x)^4 (4y) + {}^5C_2 (3x)^3 (4y)^2 \\ & + {}^5C_3 (3x)^2 (4y)^3 + {}^5C_4 (3x) (4y)^4 + (4y)^5 = \\ & 5 \times 3^4 \times 4 \times y^4 = 1620x^4y \end{aligned}$$

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11. $(8h - 3j)^4$

a) $4096h^4 - 6144h^3j + 3456h^2j^2 - 864hj^3 + 81j^4$

b) $4096h^4 + 6144h^3j - 3456h^2j^2 + 864hj^3 - 81j^4$

c) $4096h^4 + 6144h^3j + 3456h^2j^2 + 864hj^3 + 81j^4$

d) $4096h^4 - 6144h^3j - 3456h^2j^2 - 864hj^3 + 81j^4$

$$(8h)^4 + {}^4C_1 (8h)^3 (-3j) + {}^4C_2 (8h)^2 (-3j)^2 + {}^4C_3 (8h) (-3j)^3 + (-3j)^4 =$$

$$4096h^4 - 6144h^3j + 3456h^2j^2 - 864hj^3 + 81j^4$$

22. **REGULARITY** Use Pascal's Triangle to find the fourth term in the expansion of $(2x + 7)^6$. Why is it the same as the fourth term in the expansion of $(7 + 2x)^6$?

What is the fourth term in the expansion of $(2x + 7)^6$?

A) $54880x^3$

B) $274400x^3$

C) $560x^3$

D) $137200x^3$

$$r = 4 - 1 = 3 \rightarrow n = 6$$

$${}^6C_3 (2x)^{6-3} \cdot (7)^3 = {}^6C_3 (2x)^3 \cdot (7)^3 = 54880x^3$$

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26. **PERSEVERE** Find the sixth term of the expansion of $(\sqrt{a} + \sqrt{b})^{12}$.

$$r = p - 1 = 6 - 1 = \underline{5}$$

$$n = 12$$

$${}^{12}C_5 (\sqrt{a})^{12-5} (\sqrt{b})^5$$

$$792 (\sqrt{a})^7 (\sqrt{b})^5 = 792 a^3 \sqrt{a} b^2 \sqrt{b}$$

$$792 a^3 b^2 \sqrt{ab}$$

Q13-MCQ 2.5

Use Pascal's triangle to expand each binomial.

1. $(x - y)^3$

$$x^3 + 3x^2(-y) + 3x(-y)^2 + (-y)^3$$

$$x^3 - 3x^2y + 3xy^2 - y^3$$

A) $x^3 + 3x^2y + 3xy^2 + y^3$

B) $x^3 - 3xy + y^3$

~~C) $x^3 - 3x^2y + 3xy^2 - y^3$~~

D) $x^3 + y^3$

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2. $(a + b)^4 = a^4 + 4a^3b + 6a^2b^2 + 4ab^3 + b^4$

A) $a^4 + b^4$

B) $a^4 + 4a^3b + 6a^2b^2 + 4ab^3 + b^4$

C) $a^4 - 4a^3b + 6a^2b^2 - 4ab^3 + b^4$

D) $a^4 + 6a^2b^2 + b^4$

3. $(g - h)^4 = g^4 + 4g^3(-h) + 6g^2(-h)^2 + 4g(-h)^3 + (-h)^4$

A) $g^4 + 4g^3h + 6g^2h^2 + 4gh^3 + h^4$

B) $g^4 - 4g^3h + 6g^2h^2 - 4gh^3 + h^4$

C) $g^4 - 6g^2h^2 + h^4$

D) $g^4 + h^4$

4. $(m + 1)^4 = m^4 + 4m^3(1) + 6m^2(1)^2 + 4m(1)^3 + (1)^4$

a) $m^4 + 6m^3 + 4m^2 + m + 1$

b) $m^4 + 4m^3 + 6m^2 + 4m + 1$

c) $m^4 + 4m^3 + 4m^2 + 4m + 1$

d) $m^4 + m^3 + m^2 + m + 1$

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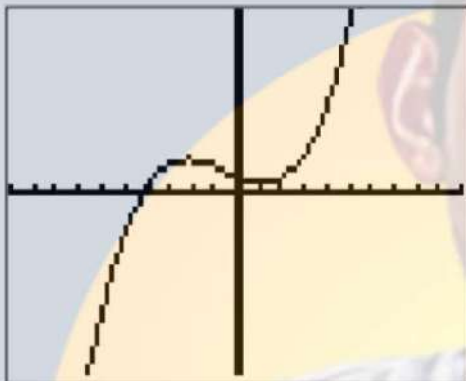
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Q14-MCQ 3.1

Use a graphing calculator to solve each equation by graphing. If necessary, round to the nearest hundredth.

1. $\frac{2}{3}x^3 + x^2 - 5x = -9$



$$\frac{2}{3}x^3 + x^2 - 5x + 9 = 0$$

mode $\rightarrow$ eqn $\rightarrow$ 2 $\rightarrow$ 3

a) $x \approx -4.12$

b) $x \approx -3.81$

c) $x \approx -3.61$

d) $x \approx -2.57$

2. $x^3 - 9x^2 + 27x = 20$

$$x^3 - 9x^2 + 27x - 20 = 0$$

mode $\rightarrow$ eqn $\rightarrow$ 2 $\rightarrow$ 3

a) $x \approx 1.05$

b) $x \approx 0.89$

c) $x \approx 1.26$

d) $x \approx 2.15$

$$\approx 1.09$$

3. $x^3 + 1 = 4x^2$

$$x^3 - 4x^2 + 1 = 0$$

x
missing

a) $x \approx -0.52, x \approx 0.61, x \approx 3.91$

b) $x \approx -0.47, x \approx 0.54, x \approx 3.93$

c) $x \approx -0.42, x \approx 0.58, x \approx 4.05$

d) $x \approx -0.39, x \approx 0.50, x \approx 3.89$

mode $\rightarrow$ eqn $\rightarrow$ 2 $\rightarrow$ 3

$$1 \approx 1 - 4 = , 0 = , 1 =$$

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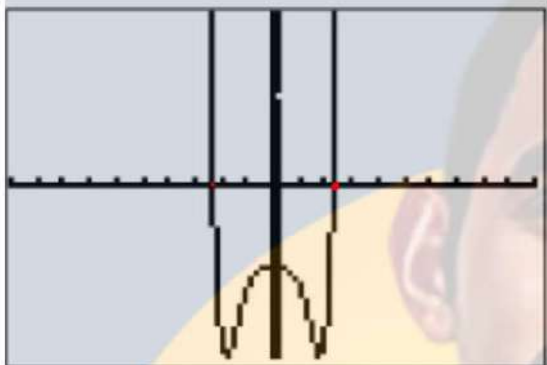
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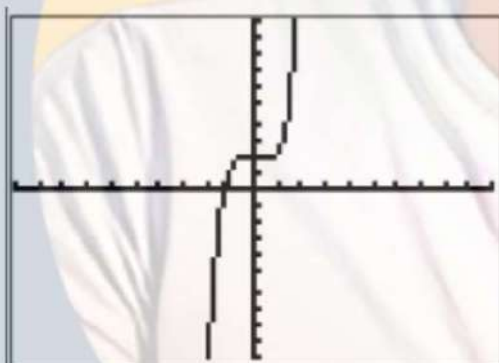


4. $x^6 - 15 = 5x^4 - x^2$



- a) $x \approx -2.26, x \approx 2.26$
- b) $x \approx -1.85, x \approx 1.85$
- ☒ c) $x \approx -2.31, x \approx 2.31$
- d) $x \approx -2.26, x \approx -1.58$

5. $\frac{1}{2}x^5 = \frac{1}{5}x^2 - 2$



- a) $x \approx -1.35$
- b) $x \approx -1.41$
- c) $x \approx -1.56$
- ☒ d) $x \approx -1.22$

6. $x^8 = -x^7 + 3$



- ☒ a) $x \approx -1.32, x \approx \underline{1.05}$
- b) $x \approx -1.18, x \approx \underline{1.02}$
- c) $x \approx -1.32, x \approx 1.11$
- d) $x \approx -1.25, x \approx \underline{1.09}$

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Q15-MCQ 3.2

1. Factor completely: $8c^3 - 27d^3$

$$\sqrt[3]{8} = 2$$

$$\sqrt[3]{27} = 3$$

a) $(2c - 3d)(4c^2 + 9d^2)$

b) $(2c + 3d)(4c^2 - 6cd + 9d^2)$

☒ c) $(2c - 3d)(4c^2 + 6cd + 9d^2)$

d) Prime

$$(2c - 3d)(4c^2 + 6cd + 9d^2)$$

2. Factor completely: $64x^4 + xy^3$

$$* x = 2$$

$$y = 3$$

$$64(2)^4 + 2(3)^3 = 1078$$

a) $x(64x^3 + y^3)$

☒ b) $x(4x + y)(16x^2 - 4xy + y^2) = 2(4(2) + 3)(16(2)^2 - 4(2)(3) + 3^2) = 1078$

c) $x(4x + y)(16x^2 + 4xy + y^2)$

d) Prime

3. Factor completely: $a^8 - a^2b^6$

$$= 2^8 - 2^2(3)^6 = -2660$$

a) $a^2(a^6 - b^6)$

b) $a^2(a^3 - b^3)(a^3 + b^3)$

☒ c) $a^2(a - b)(a^2 + ab + b^2)(a + b)(a^2 - ab + b^2)$

d) All of the above

$$2^2(2-3)(2^2+2(3)+3^2)(2+3)(2^2-2(3)+3^2) = -2660$$

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4. Factor completely: $x^6y^3 + y^9$

$$GCF = y^3$$

a) $y^3(x^6 + y^6)$

$$y^3(x^6 + y^6)$$

b) $y^3(x^3 + y^3)(x^3 - y^3)$

$$y^3(x^3 + y^3)(x^3 - y^3)$$

c) $y^3(x^2 + y^2)(x^4 - x^2y^2 + y^4)$

d) $y^3(x^2 + y^2)(x^4 + x^2y^2 + y^4)$

$$(x^2 + y^2)(x^4 - x^2y^2 + y^4)$$

5. Factor completely: $18x^6 + 5y^6$

$$18x^6 + 5y^6$$

a) $(3\sqrt{2}x^3 + \sqrt{5}y^3)(3\sqrt{2}x^3 - \sqrt{5}y^3)$

b) $(\sqrt{18}x^3 + \sqrt{5}y^3)(\sqrt{18}x^3 - \sqrt{5}y^3)$

c) Prime

d) $(18x^6 + 5y^6)(1)$

$$18x^6 + 5y^6$$

6. Factor completely: $w^3 - 2y^3$

$$w^3 - 2y^3$$

a) $(w - \sqrt[3]{2}y)(w^2 + \sqrt[3]{2}wy + \sqrt[3]{4}y^2)$

b) $(w - 2y)(w^2 + 2wy + 4y^2)$

c) Prime

d) $(w^3 - 2y^3)(1)$

$$w^3 - 2y^3$$



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$$7. gx^2 - 3hx^2 - 6fy^2 - gy^2 + 6fx^2 + 3hy^2$$

Factor completely.

A. $(x^2 - y^2)(g - 3h + 6f)$

B. $(x - y)(g - 3h + 6f)$

C. $(x + y)(g - 3h + 6f)$

D. $(x^2 + y^2)(g - 3h + 6f)$

$$x^2(g - 3h + 6f) - y^2(6f + g - 3h)$$

$$(x^2 - y^2)(g - 3h + 6f)$$

$$8. 12ax^2 - 20cy^2 - 18bx^2 - 10ay^2 + 15by^2 + 24cx^2$$

$$2 \cdot 6 \quad 4 \cdot 5 \quad 3 \cdot 6 \quad 2 \cdot 5 \quad 3 \cdot 5 \quad 4 \cdot 6$$

Factor completely.

A. $(6a - 9b + 12c)(2x^2 - y^2)$

B. $(2a - 3b + 4c)(6x^2 - 5y^2)$

C. $(2a + 3b + 4c)(6x^2 - 5y^2)$

D. Prime

$$6x^2[2a - 3b + 4c]$$

$$-5y^2[4c + 2a - 3b] =$$

$$(6x^2 - 5y^2)(2a - 3b + 4c)$$

$$9. a^3x^2 - 16a^3x + 64a^3 - b^3x^2 + 16b^3x - 64b^3$$

Factor completely.

A. $(a^3 - b^3)(x - 8)^2$

B. $(a^2 + ab + b^2)(x - 8)^2$

C. $(a^2 + ab + b^2)(x + 8)^2$

D. $(a^3 + b^3)(x - 8)^2$

$$a^3(x^2 - 16x + 64) - b^3(x^2 - 16x + 64)$$

$$= (a^3 - b^3)(x^2 - 16x + 64) \Rightarrow \frac{a^3 - b^3}{a - b} = a^2 + ab + b^2$$

$$(a^3 - b^3)(x - 8)^2$$

$$x = 8$$



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10. $8x^5 - 25y^3 + 80x^4 - x^2y^3 + 200x^3 - 10xy^3$ GCF هو

Factor completely.

A. $(x+5)^2(2x+y)(4x^2-2xy+y^2)$ $8x^3 (x^2 + 10x + 25)$
 B. $(x-5)^2(2x-y)(4x^2+2xy+y^2)$ $-y^3 (25 + x^2 + 10x)$
 C. $(x+5)^2(2x-y)(4x^2+2xy+y^2)$ $= (8x^3 - y^3)(x^2 + 10x + 25)$
 D. Prime
 $= (2x - y)(4x^2 + 2xy + y^2) (x + 5)^2$

Q16-MCQ 3.2

22) Solve the equation.

$$x^4 + 6x^2 + 5 = 0$$

A. $x = \pm i, \pm 5i$

B. No solution

C. $x = \pm i, \pm \sqrt{5}i$

D. $x = \pm 1, \pm 5$

mode $\rightarrow 2$ mode $\rightarrow$ eqn $\rightarrow 2 \rightarrow 4$

$$1 = , 0 = , 6 = , 0 = , 5 =$$

x^3 missing x

23) Solve the equation.

$$x^4 - 3x^2 - 10 = 0$$

A. $x = \pm\sqrt{5}, \pm i\sqrt{2}$

B. $x = \pm\sqrt{2}, \pm i\sqrt{5}$

C. $x = \pm 5, \pm 2$

D. $x = \pm\sqrt{10}$

mode $\rightarrow$ equation $\rightarrow 2 \rightarrow 4$

$$1 = , 0 = , -3 = , 0 = , -10 =$$

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24) Solve the equation.

$$4x^4 - 14x^2 + 12 = 0$$

A. $x = \pm\sqrt{\frac{3}{2}}, \pm\sqrt{2}$

B. $x = \pm\sqrt{2}, \pm\sqrt{3}$

C. $x = \pm 3, \pm 2$

D. $x = \pm\sqrt{6}$

mode $\rightarrow$ equation $\rightarrow 2 \rightarrow 4$
 $4 = , 0 = , -14 = , 0 = , 12 =$

$$\frac{\sqrt{6}}{2} = \sqrt{\frac{3}{2}}$$

25) Solve the equation

$$9x^4 - 27x^2 + 20 = 0.$$

A. $x = \pm\frac{2\sqrt{3}}{3}, \pm\frac{\sqrt{15}}{3}$

B. $x = \pm\frac{\sqrt{3}}{2}, \pm\frac{\sqrt{15}}{3}$

C. $x = \pm\frac{2\sqrt{3}}{3}, \pm\frac{3\sqrt{15}}{5}$

D. $x = \pm\frac{4\sqrt{3}}{3}, \pm\frac{\sqrt{15}}{3}$

mode $\rightarrow$ equation $\rightarrow 2 \rightarrow 4$

$9 = , 0 = , -27 = , 0 = , 20 =$
 x^3 missing x

26) Solve the equation.

$$4x^4 - 5x^2 - 6 = 0$$

A. $x = \pm\sqrt{3}, \pm\frac{\sqrt{2}}{2}i$

B. $x = \pm\sqrt{2}, \pm\frac{\sqrt{3}}{2}$

C. $x = \pm\sqrt{6}, \pm i$

D. $x = \pm\sqrt{2}, \pm\frac{\sqrt{3}}{2}i$

$4 = , 0 = , -5 = , 0 = , -6 =$

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27) Solve the equation.

$$24x^4 + 14x^2 - 3 = 0$$

A. $x = \pm \frac{1}{2}, \pm \frac{\sqrt{6}}{6}i$

B. $x = \pm \frac{\sqrt{6}}{6}, \pm \frac{\sqrt{3}}{2}i$

C. $x = \pm \frac{1}{2}, \pm \frac{\sqrt{3}}{2}i$

D. $x = \pm \frac{\sqrt{3}}{2}, \pm \frac{\sqrt{6}}{6}$

$$24 = , 0 = , 14 = , 0 = , -3 =$$

Q17-MCQ 3.4

31. $x^3 + 2x^2 - x - 2$, given factor: $x + 1$ ✓

Find the remaining factors.

A. $(x - 1)(x + 2)$

B. $(x + 1)(x - 2)$

C. $(x - 1)(x - 2)$

D. $(x + 2)(x + 1)$

$$\text{mode} \rightarrow \text{equa} \rightarrow 2 \rightarrow |3|$$

$$1 = , 2 = , -1 = , -2 =$$

$$x = -1 \rightarrow (x + 1) \checkmark$$

$$x = 1 \rightarrow (x - 1)$$

$$x = -2 \rightarrow (x + 2)$$

32. $x^3 + x^2 - 5x + 3$, given factor: $x - 1$ ✓

Find the remaining factors.

A. $(x - 1)(x + 3)$

B. $(x + 1)(x - 3)$

C. $(x - 1)(x - 3)$

D. $(x + 1)(x + 3)$

$$\text{mode} \rightarrow \text{equation} \rightarrow 2 \rightarrow |3|$$

$$1 = , 1 = , -5 = , 3 =$$

$$x = -3 \rightarrow (x + 3)$$

$$x = 1 \rightarrow (x - 1) \checkmark$$

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33. $x^3 + 3x^2 - 4x - 12$, given factor: $x + 3$

Find the remaining factors.

☒ A. $(x - 2)(x + 2)$

B. $(x - 2)^2$

C. $(x + 2)^2$

D. $(x - 4)(x + 1)$

$$x = -3 \rightarrow (x + 3)$$

$$x = -2 \rightarrow (x + 2) \checkmark$$

$$x = 2 \rightarrow (x - 2) \checkmark$$

34. $x^3 - 6x^2 + 11x - 6$, given factor: $x - 3$

Find the remaining factors.

☒ A. $(x - 1)(x - 2)$

B. $(x + 1)(x - 2)$

C. $(x - 1)(x + 2)$

D. $(x - 2)^2$

$$x = 1 \rightarrow (x - 1) \checkmark$$

$$x = 3 \rightarrow (x - 3)$$

$$x = 2 \rightarrow (x - 2) \checkmark$$

35. $x^3 + 2x^2 - 33x - 90$, given factor: $x + 5$

Find the remaining factors.

A. $(x - 5)(x + 18)$

☒ B. $(x - 6)(x + 3)$

C. $(x - 5)(x - 18)$

D. $(x + 6)(x - 15)$

$$x = 6 \rightarrow (x - 6) \checkmark$$

$$x = -3 \rightarrow (x + 3) \checkmark$$

$$x = -5 \rightarrow (x + 5)$$

36. $x^3 - 6x^2 + 32$, given factor: $x - 4$

Find the remaining factors.

☒ A. $(x - 4)(x + 2)$

B. $(x + 2)^2$

C. $(x - 2)(x - 4)$

D. $(x + 4)(x - 2)$

$$1 = , -6 = , 0 = , 32 =$$

$$x = -2 \rightarrow (x + 2)$$

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

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37. $x^3 - x^2 - 10x - 8$, given factor: $x + 2$

Find the remaining factors.

A. $(x - 4)(x + 1)$

B. $(x + 4)(x - 1)$

C. $(x - 2)(x + 4)$

D. $(x + 2)(x - 4)$

$x = 4 \rightarrow (x - 4) \checkmark$

$x = -1 \rightarrow (x + 1) \checkmark$

$x = -2 \rightarrow (x + 2)$

38. $x^3 - 19x + 30$, given factor: $x - 2$

Find the remaining factors.

A. $(x - 5)(x + 3)$

B. $(x - 6)(x + 5)$

C. $(x - 3)(x + 5)$

D. $(x + 3)(x + 5)$

$1 = 1, 0 = 0, -19 = -19, 30 = 30$

$x = -5 \rightarrow (x + 5) \checkmark$

$x = 2 \rightarrow (x - 2)$

$x = 3 \rightarrow (x - 3) \checkmark$

Q18-MCQ 3.5

17. State the possible number of positive real zeros,

negative real zeros, and imaginary zeros of the function.

$g(x) = 3x^3 - 4x^2 - 17x + 6$

A. 2 positive, 1 negative, 0 imaginary

B. 3 positive, 0 negative, 0 imaginary

C. 1 positive, 2 negative, 0 imaginary

D. 1 positive, 1 negative, 1 imaginary

$(+) \rightarrow + \rightarrow -$

$$\begin{array}{ccccccc} + & - & - & + \\ & \downarrow & \downarrow & \downarrow \\ & 1 & & 1 \end{array}$$

2 Positive

$$- \rightarrow \text{change signs of odd power } x, x, x, x$$

$$- \rightarrow + \rightarrow - \rightarrow +$$

$$1 \text{ Negative}$$

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* I) Powers - positive - Negative

$$3 - 2 - 1 = 0$$

+	-	i
2	1	$3 - 2 - 1 = 0$
0	1	$3 - 0 - 1 = 2$

$n - 2$
 $2 - 2 = 0$

18. State the possible number of positive real zeros, negative real zeros, and imaginary zeros of the function.

$$h(x) = 4x^3 - 12x^2 - x + 3$$

- A. 1 positive real zero, 2 negative real zeros, 0 imaginary zeros
- B. 3 positive real zeros, 0 negative real zeros, 0 imaginary zeros
- ☒ C. 2 positive real zeros, 1 negative real zero, 0 imaginary zeros
- D. 1 positive real zero, 1 negative real zero, 1 imaginary zero

+) $\rightarrow + \rightarrow - \rightarrow - \rightarrow +$ [2]

-) Change Sign x, x^3, x^5 only.

$- \rightarrow - \rightarrow + \rightarrow +$ [1]

i) Powers - positive - Negative
 $3 - 2 - 1 = 0$

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19. State the possible number of positive real zeros, negative real zeros, and imaginary zeros of the function.

$$f(x) = x^3 - 8x^2 + 2x - 4$$

- A. 1 positive real zero, 2 negative real zeros, 0 imaginary zeros
 B. 3 positive real zeros, 0 negative real zeros, 0 imaginary zeros
 C. 1 positive real zero, 1 negative real zero, 1 imaginary zero
 D. 2 positive real zeros, 1 negative real zero, 0 imaginary zeros

$$+ \rightarrow + \rightarrow - \rightarrow + \rightarrow - \quad |3|$$

$$- \rightarrow - \rightarrow - \rightarrow - \rightarrow - \quad |0|$$

$$i) \rightarrow 3 - 3 - 0 = |0|$$

20) State the possible number of positive real zeros, negative real zeros, and imaginary zeros of $p(x) = x^3 - x^2 + 4x - 6$.

- A. Positive: 3 or 1, Negative: 0, Imaginary: 0 or 2
 B. Positive: 2 or 0, Negative: 1, Imaginary: 1 or 3
 C. Positive: 3, Negative: 0, Imaginary: 2
 D. Positive: 1, Negative: 1, Imaginary: 1

$$+ \rightarrow + \rightarrow - \rightarrow + \rightarrow - \quad |3|$$

$$- \rightarrow - \rightarrow - \rightarrow - \rightarrow - \quad |0|$$

$$i) \rightarrow 3 - 3 - 0 = |0|$$

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23. State the possible number of positive real zeros, negative real zeros, and imaginary zeros of the function.

$$f(x) = x^4 - 5x^3 + 2x^2 + 5x + 7$$

- (A) 2 positive, 2 negative, 0 imaginary
 B. 2 positive, 0 negative, 2 imaginary
 C. 0 positive, 2 negative, 2 imaginary
 D. All of the above

+) → + → - → + → + → + → + [2]

-) → + → + → + → - → + [2]

+) → 4 - 2 - 2 = [0]

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Q19-MCQ 4.1

$$f(x) = 3x, g(x) = x + 4, h(x) = x^2 - 1$$

*بند باطنی آرد

$$\textcircled{1} g(1) = 1 + 4 = 5$$

21. $f[g(1)]$

A. 12

☒ B. 15

C. 9

D. 18

$$\textcircled{2} f(5) = 3(5) = 15$$

*تم لغو في الأول

22. $g[h(0)]$

A. 4

☒ B. 3

C. 5

D. -3

$$f(x) = 3x, g(x) = x + 4, h(x) = x^2 - 1$$

$$\textcircled{1} h(0) = 0^2 - 1 = -1$$

$$\textcircled{2} g(-1) = -1 + 4 = 3$$

23. $g[f(-1)]$

☒ A. 1

B. -1

C. 3

D. 7

$$f(x) = 3x, g(x) = x + 4, h(x) = x^2 - 1$$

$$\textcircled{1} f(-1) = 3(-1) = -3$$

$$\textcircled{2} g(-3) = -3 + 4 = 1$$

24. $h[f(5)]$

☒ A. 224

B. 225

C. 196

D. 256

$$f(x) = 3x, g(x) = x + 4, h(x) = x^2 - 1$$

$$\textcircled{1} f(5) = 3(5) = 15$$

$$\textcircled{2} h(15) = 15^2 - 1 = 224$$

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25. $g[h(-3)]$

$f(x) = 3x, g(x) = x + 4, h(x) = x^2 - 1$

A. 13

✓ B. 12

C. 11

D. 8

* $h(-3) = (-3)^2 - 1 = 8$

* $g(8) = 8 + 4 = 12$

26. $h[f(10)]$

$f(x) = 3x, g(x) = x + 4, h(x) = x^2 - 1$

✓ A. 899

B. 900

C. 8999

D. 901

* $f(10) = 3(10) = 30$

* $h(30) = 30^2 - 1$

27. $f[h(8)]$

$f(x) = 3x, g(x) = x + 4, h(x) = x^2 - 1$

✓ A. 189

B. 192

C. 186

D. 201

* $h(8) = 8^2 - 1 = 63$

* $f(63) = 3(63) = 189$

28. $(f \circ (h \circ g))(1)$

$f(x) = 3x, g(x) = x + 4, h(x) = x^2 - 1$

✓ A. 72

B. 75

C. 69

D. 84

① $g(1) = 1 + 4 = 5$

② $h(5) = 5^2 - 1 = 24$

③ $f(24) = 3(24) = 72$

29. $(f \circ (g \circ h))(-2)$

$f(x) = 3x, g(x) = x + 4, h(x) = x^2 - 1$

A. 18

✓ B. 21

C. 24

D. 15

* $h(-2) = (-2)^2 - 1 = 3$

* $g(3) = 3 + 4 = 7$

* $f(7) = 3(7) = 21$

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Q20-MCQ 4.2

Determine whether each pair of functions are inverse functions. Write yes or no.

17. $f(x) = x - 1$

a. yes

$g(x) = 1 - x$

b. not

① replace

$f(x) \rightarrow x$

$x \rightarrow y$

② y alone.

$x = y - 1$

$y = x + 1 \neq g(x)$

Determine whether each pair of functions are inverse functions. Write yes or no.

18. $f(x) = 2x + 3$

a. yes

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

b. not

$x = 2y + 3$

$x - 3 = 2y$

$\Rightarrow y = \frac{1}{2}(x - 3) = g(x)$

19. $f(x) = 5x - 5$

a. yes

$g(x) = \frac{1}{5}x + 1$

b. not

$x = 5y - 5$

$x + 5 = 5y$

$y = \frac{1}{5}(x + 5) = \frac{1}{5}x + 1 = g(x)$

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20. $f(x) = 2x$

✓ a. yes

$x = 2y$

$\underline{g(x)} = \frac{1}{2}x$

b. not

$y = \frac{1}{2}x = g(x)$

21. $h(x) = 6x - 2$

a. yes

$x = 6y - 2$

$g(x) = \frac{1}{6}x + 3$

✓ b. not

$x + 2 = 6y$

$y = \frac{1}{6}(x + 2) = \frac{1}{6}x + \frac{1}{3} \neq g(x)$

Q21-MCQ 4.3

1. Simplify $\pm \sqrt{121x^4y^{16}}$.

square

root $\sqrt{\quad}$

• (A) $\pm 11x^2y^8$

• (B) $\pm 11xy^4$

• (C) $\pm 121x^2y^8$

• (D) $\pm 121xy^4$

$\pm \sqrt{121} x^{\frac{4}{2}} y^{\frac{16}{2}}$
 $\pm 11 x^2 y^8$

نفس البداية $\frac{2}{2}$

2. Simplify $\pm \sqrt{225a^{16}b^{36}}$.

 $\sqrt{\quad} \rightarrow \div 2$

• (A) $\pm 15a^8b^{18}$

• (B) $\pm 15a^4b^9$

• (C) $\pm 225a^8b^{18}$

• (D) $\pm 225a^4b^9$

$\pm \sqrt{225} a^{\frac{16}{2}} b^{\frac{36}{2}}$
 $\pm 15 a^8 b^{18}$

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3. Simplify $\pm\sqrt{49x^4}$.

- (A) $\pm 7x^2$ $\pm \sqrt{49} x^{\frac{4}{2}}$
- (B) $\pm 7x$
- (C) $\pm 49x^2$ $\pm 7x^2$
- (D) $\pm 49x$

4. Simplify $-\sqrt{16c^4d^2}$.

- (A) $-4c^2d$ $-\sqrt{16} c^{\frac{4}{2}} d^{\frac{2}{2}}$ $\frac{4}{2}$ even, $\frac{2}{2}$ even
 - (B) $-4cd$ $-4 c^2 d^1$ $\frac{4}{2}$ even, $\frac{1}{2}$ odd
 - (C) $-16c^2d$ $-4 c^2 d^1$ $\frac{4}{2}$ even, $\frac{1}{2}$ odd
 - (D) $-16cd$ $-4 c^2 d^1$ $\frac{4}{2}$ even, $\frac{1}{2}$ odd
- up even $\rightarrow$ odd
down even $\rightarrow$ odd

6. Simplify $-\sqrt{400x^{32}y^{40}}$.

- (A) $-20x^{16}y^{20}$ $-\sqrt{400} x^{\frac{32}{2}} y^{\frac{40}{2}}$
- (B) $-20x^8y^{10}$ $-20 x^{16} y^{20}$
- (C) $-400x^{16}y^{20}$
- (D) $-400x^8y^{10}$

8. Simplify $\sqrt[8]{x^{16}y^8}$.

- (A) x^2y $x^{\frac{16}{8}} y^{\frac{8}{8}}$ $\frac{16}{8}$ even, $\frac{8}{8}$ even
- (B) x^4y^2 $x^2 y^1$ $\frac{16}{8}$ even, $\frac{8}{8}$ even
- (C) $x^{16/8}y^{8/8}$ $x^2 y^1$ $\frac{16}{8}$ even, $\frac{8}{8}$ even
- (D) x^8y^4 $x^2 y^1$ $\frac{16}{8}$ even, $\frac{8}{8}$ even

10. Simplify $\sqrt[6]{x^{18}}$.

- (A) $|x^3|$ $\frac{18}{6} \rightarrow$ even
- (B) x^6 $\frac{18}{6} \rightarrow$ even
- (C) $x^{18/6}$ $3 \rightarrow$ odd
- (D) x^9 $3 \rightarrow$ odd

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11. Simplify $\sqrt[4]{a^{12}}$.

• ~~(A) a^3~~

• (B) a^4

• (C) $a^{12/4}$

• (D) a^6

$\frac{12}{4} \rightarrow \text{even}$
 $a \rightarrow \text{even}$

$3 \rightarrow \text{odd}$
 a

12. Simplify $\sqrt[3]{a^{12}}$.

• ~~(A) a^4~~

• (B) a^3

• (C) $a^{12/3}$

• (D) a^6

$\frac{12}{3}$
 a

4
 a

Q22-MCQ 4.4

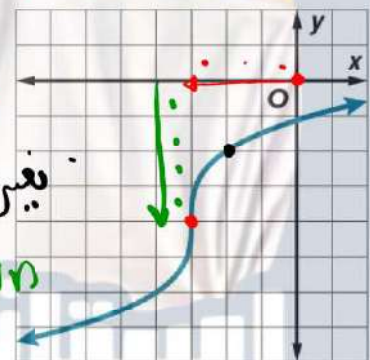
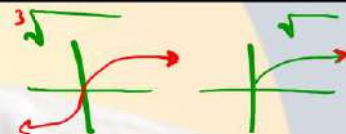
Example 7 Write a Radical FunctionWrite a radical function for the graph of $g(x)$.

A) $f(x) = \sqrt[3]{x+2} + 1$ * 3 units left

☒ B) $f(x) = 2\sqrt[3]{x+3} - 4$ $h = -3$ $k = -4$ غير 3

C) $f(x) = \sqrt[3]{x-2} + 1$ * 4 units down

D) $f(x) = \sqrt{x-2} + 1$ $k = -4$



$$y = a \sqrt[3]{x - h} + k$$

Take any point on graph then خذ أي نقطة
substitute. $(-2, -2)$

$$y = 2\sqrt[3]{-2 + 3} - 4 = -2$$

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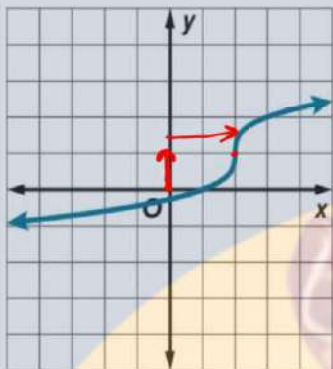
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Write a radical function for each graph.

27.



A) $f(x) = \sqrt[3]{x+2} + 1$

B) $f(x) = \sqrt[3]{x-2} - 1$

☒ C) $f(x) = \sqrt[3]{x-2} + 1$

D) $f(x) = \sqrt{x-2} + 1$

* 1 unit up

$$|k = 1|$$

* 2 units right

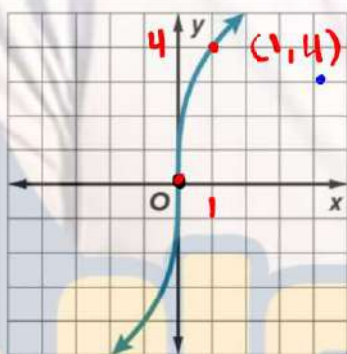
$$h = 2$$

$$y = a \sqrt[3]{x-h} + k = a \sqrt[3]{x-2} + 1$$

h → Right +
left -

k → up +
down -

28.



A) $f(x) = \sqrt[3]{x} = \sqrt[3]{1} = 1$ ✗

☒ B) $f(x) = 4\sqrt[3]{x} = 4\sqrt[3]{1} = 4$ ✓

C) $f(x) = \sqrt[3]{x-2}$ ✗

D) $f(x) = \sqrt{x}$ ✗

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Q23-MCQ 4.5

Simplify the expression.

11. $\sqrt{2} + \sqrt{8} + \sqrt{50}$

A. $7\sqrt{2}$

☒ B. $8\sqrt{2}$

C. $6\sqrt{2}$

D. 8

Simplify the expression.

12. $\sqrt{12} - 2\sqrt{3} + \sqrt{108}$

☒ A. $6\sqrt{3}$

B. $4\sqrt{3}$

C. $5\sqrt{3}$

D. $8\sqrt{3}$

13. $8\sqrt{5} - \sqrt{45} - \sqrt{80}$

☒ A) $\sqrt{5}$

B) $3\sqrt{5}$

C) $-\sqrt{5}$

D) 0

14. $2\sqrt{48} - \sqrt{75} - \sqrt{12}$

A) $5\sqrt{3}$

☒ B) $\sqrt{3}$

C) $-\sqrt{3}$

D) $3\sqrt{3}$

15. $\sqrt{28x} - \sqrt{14} + \sqrt{63x}$

☒ A. $5\sqrt{7x} - \sqrt{14}$

B. $2\sqrt{7x} + \sqrt{14}$

C. $3\sqrt{7x} - \sqrt{14}$

D. $4\sqrt{7x} - \sqrt{14}$

16. $\sqrt{135} + 5\sqrt{10d} - 3\sqrt{60}$

A. $6\sqrt{15} + 5\sqrt{10d}$

☒ B. $-3\sqrt{15} + 5\sqrt{10d}$

C. $5\sqrt{15} + 5\sqrt{10d}$

D. $9\sqrt{15} + 5\sqrt{10d}$



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سلسلة الطارق في الرياضيات منصة طارق أكاديمي

10

متقدم



Q24-MCQ 4.5

Simplify the expression.

5. $\sqrt[4]{64a^4b^4}$

A. $2ab\sqrt[4]{4}$

B. $4|ab|$

C. $2|ab|\sqrt[4]{4}$

D. $8|ab|$

Shift $\rightarrow \sqrt[4]{}$

$\sqrt[4]{64} \cdot a \cdot b$

$\sqrt[4]{4}$ even
even
= odd
1 1

$= 2|ab|\sqrt[4]{4}$

Simplify the expression.

6. $\sqrt[3]{-8a^2b^5}$

A. $-2ab\sqrt[3]{b^2}$

B. $-2b\sqrt[3]{a^2b^2}$

C. $2b\sqrt[3]{a^2b^2}$

D. $-2a\sqrt[3]{b^2}$

$a = 2$
 $b = 3$

$\sqrt[3]{-8(2)^2(3)^5} = -19.8$

$-2(3)\sqrt[3]{(2)^2(3)^2} = -19.8$

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متقدم



1. Simplify the expression. $\sqrt{\frac{25}{36}t^2}$

A. $\frac{5t}{6}$

B. $\frac{5}{6} |t|$

C. $\frac{25}{36}t$

D. $\frac{5}{36} |t|$

Handwritten solution for Question 1:

$$\sqrt{\frac{25}{36}t^2} = \sqrt{\frac{25}{36}} \cdot t^{\frac{2}{2}}$$

Since $\frac{2}{2} = 1$ (odd), the result is $\frac{5}{6} |t|$.

Simplify the expression

$x = 2$ نعوض

8. $\sqrt[4]{\frac{192x^4}{64}}$ = $\sqrt[4]{\frac{192(2)^4}{64}}$ = 2.63

A. $\sqrt[4]{3x}$

B. $|x| \sqrt[4]{3}$ = $|2| \cdot \sqrt[4]{3}$

C. $3 |x|$

D. $|x| \sqrt[4]{2}$

Handwritten solution for Question 8:

$$= 2 \times \sqrt[4]{3} = 2.63$$

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متقدم



9. What is the simplified form of the

expression? $\sqrt[5]{\frac{3072h^8}{243r^5}}$

$$h = 2$$

$$r = 3$$

A. $\frac{4h\sqrt[5]{3h^3}}{3r}$

B. $\frac{4h\sqrt[5]{3h}}{3r^5}$

C. $\frac{2h\sqrt[5]{3h^3}}{3r}$

D. $\frac{4h^3\sqrt[5]{3h}}{3r}$

$$\sqrt[5]{\frac{3072 (2)^8}{243 (3)^5}} = 1.67$$

A. $\frac{4(2) \sqrt[5]{3(2)^3}}{3(3)} = 1.67$

10. Simplify the expression.

$$\sqrt[3]{\frac{432n^{12}}{64v^6}}$$

$$n = 2$$

$$v = 3$$

A. $\frac{3n^4}{2v^2} \sqrt[3]{2}$

B. $\frac{2n^4}{v^2} \sqrt[3]{3}$

C. $\frac{3n^4}{2v^2}$

D. $\frac{2n^4}{v^2}$

$$\sqrt[3]{\frac{432 (2)^{12}}{64 (3)^6}} = 3.359$$

A. $\frac{3(2)^4 \sqrt[3]{2}}{2(3)^2} = 3.359$

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متقدم



Q25-MCQ 4.6

1. Solve the equation.

$$5\sqrt{j} = 1$$

A. $j = \frac{1}{5}$

☒ B. $j = \frac{1}{25}$

C. $j = 25$

D. $j = 5$

* Shift $\rightarrow$ solve $\rightarrow =$

ان كان من المطلوب هو

only one value.

$$0.04 = \frac{1}{25}$$

2. Solve the equation.

$$\sqrt{b-5} = 4$$

A. $b = 11$

☒ B. $b = 21$

C. $b = 16$

D. $b = 9$

Shift
Solve

$\rightarrow =$

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10

متقدم



3. Solve the equation.

$$\sqrt{3n + 1} = 5$$

A. $n = 6$

B. $n = 5$

C. $n = 8$

D. $n = 7$

Shift → Solve
→ =

4. Solve the equation.

$$2 + \sqrt{3p + 7} = 6$$

A. $p = 5$

B. $p = 3$

C. $p = 7$

D. $p = 9$

Shift → Solve
→ =



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متقدم



5. Solve the equation.

$$\sqrt{k-4} - 1 = 5$$

☒ A. $k = 40$

B. $k = 36$

C. $k = 49$

D. $k = 25$

Shift $\rightarrow$ solve
 $\rightarrow =$

6. Solve the equation.

$$5 = \sqrt{2g-7}$$

A. $g = 18$

☒ B. $g = 16$

C. $g = 14$

D. $g = 12$

Shift $\rightarrow$ solve
 $\rightarrow =$

طارق علي
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IN

Math

$\pi = 3.14$

$A = \frac{ab + c}{d}$

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$a^2 + b^2 = c^2, c = \sqrt{a^2 + b^2}$

$c^2 + a^2 = b^2, c^2 - b^2 = a^2$

$a^2 = 2a$

$f(a + b) = c$

$(x + y)^2 - (x - y)$

$+ 2c = 1$

$\frac{a}{c} = \frac{HB}{a}$

$Me =$

MATH

ψ

z

b

90°

خاص بالمنصة

خاص بجميع الجروبات و القنوات

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