

تم تحميل هذا الملف من موقع المناهج الإماراتية



الملف أسئلة نموذج هيكل امتحاني

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روابط مواقع التواصل الاجتماعي بحسب الصف الحادي عشر المتقدم



روابط مواد الصف الحادي عشر المتقدم على تلغرام

[الرياضيات](#)

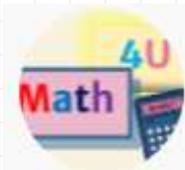
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المزيد من الملفات بحسب الصف الحادي عشر المتقدم والمادة رياضيات في الفصل الثاني

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Math4U

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## هيكل امتحانات الفصل الدراسي الثاني

الصف / الحادي عشر متقدم



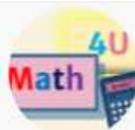
Graph each equation.

5.  $y = (x - 4)^2 - 6$

6.  $y = 4(x + 5)^2 + 3$

7.  $y = -3x^2 - 4x - 8$

8.  $x = 3y^2 - 6y + 9$



Write an equation for each parabola described below. Then graph the equation.

26. vertex  $(0, 1)$ , focus  $(0, 4)$

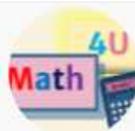
27. vertex  $(1, 8)$ , directrix  $y = 3$

28. focus  $(-2, -4)$ , directrix  $x = -6$

29. focus  $(2, 4)$ , directrix  $x = 10$

30. vertex  $(-6, 0)$ , directrix  $x = 2$

31. vertex  $(9, 6)$ , focus  $(9, 5)$



Write an equation for each circle given the endpoints of a diameter.

23.  $(2, 1)$  and  $(2, -4)$

24.  $(-4, -10)$  and  $(4, -10)$

25.  $(5, -7)$  and  $(-2, -9)$

26.  $(-6, 4)$  and  $(4, 8)$

27.  $(2, -5)$  and  $(6, 3)$

28.  $(18, 11)$  and  $(-19, -13)$

29. **LAWN CARE** A sprinkler waters a circular section of lawn.

a. Write an equation to represent the boundary of the sprinkler area if the endpoints of a diameter are at  $(-12, 16)$  and  $(12, -16)$ .

b. What is the area of the lawn that the sprinkler waters?

Find the center and radius of each circle. Then graph the circle.

31.  $x^2 + y^2 = 75$

32.  $(x - 3)^2 + y^2 = 4$

33.  $(x - 1)^2 + (y - 4)^2 = 34$

34.  $x^2 + (y - 14)^2 = 144$

35.  $(x - 5)^2 + (y + 2)^2 = 16$

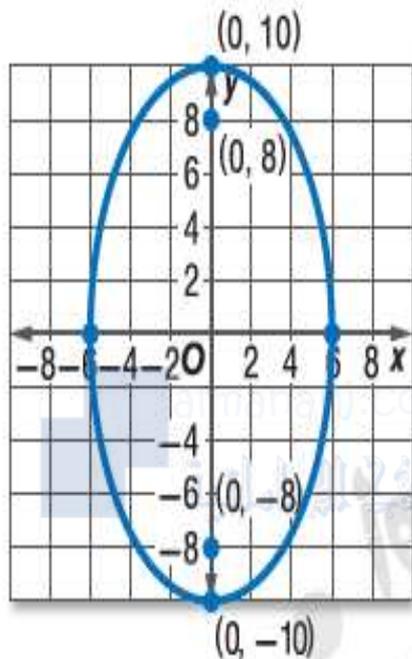
36.  $x^2 + y^2 = 256$

37.  $(x - 4)^2 + y^2 = \frac{8}{9}$

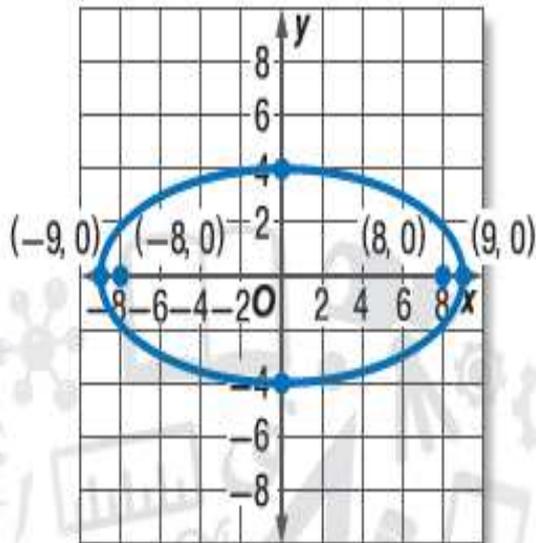
38.  $\left(x + \frac{2}{3}\right)^2 + \left(y - \frac{1}{2}\right)^2 = \frac{16}{25}$

Write an equation for each ellipse.

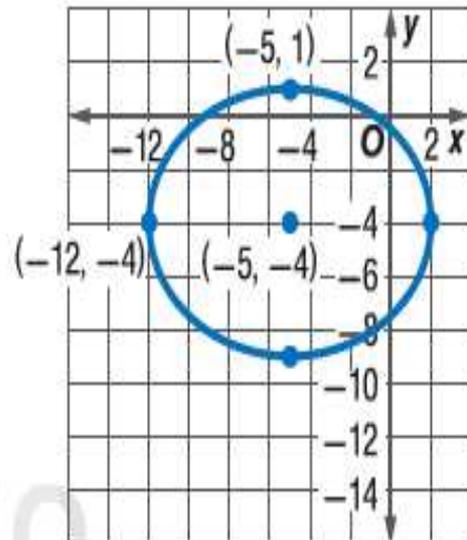
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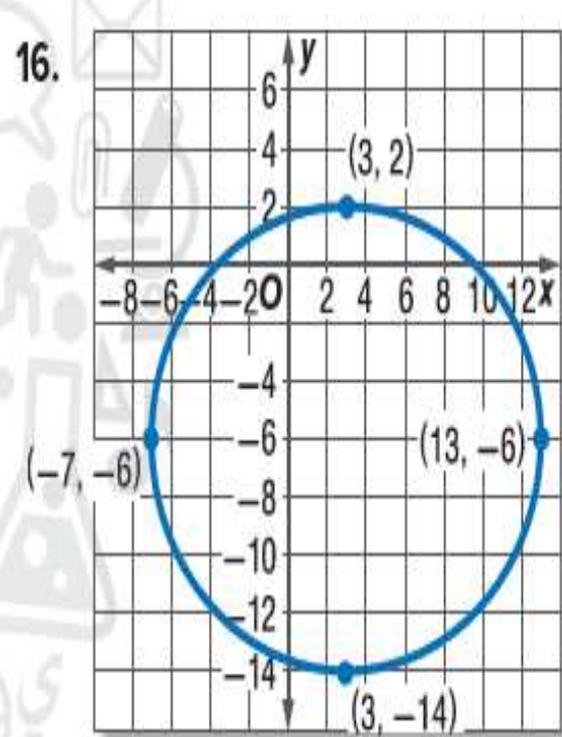
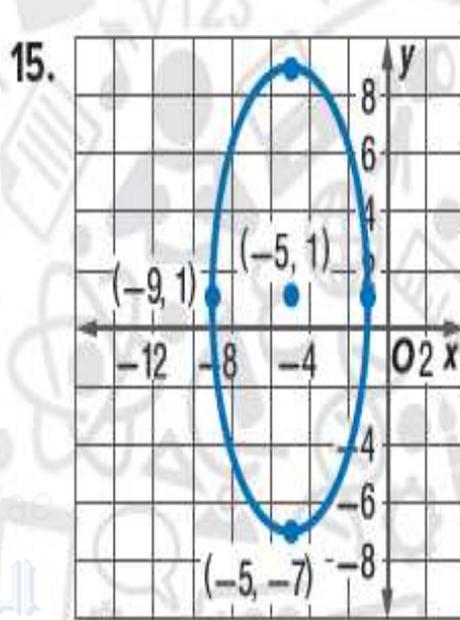
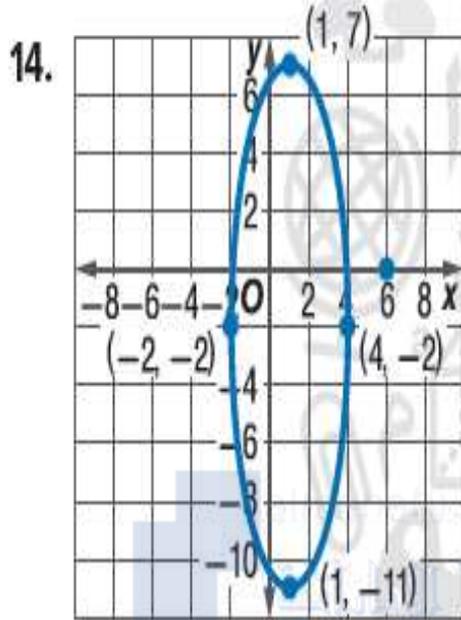


12.



13.

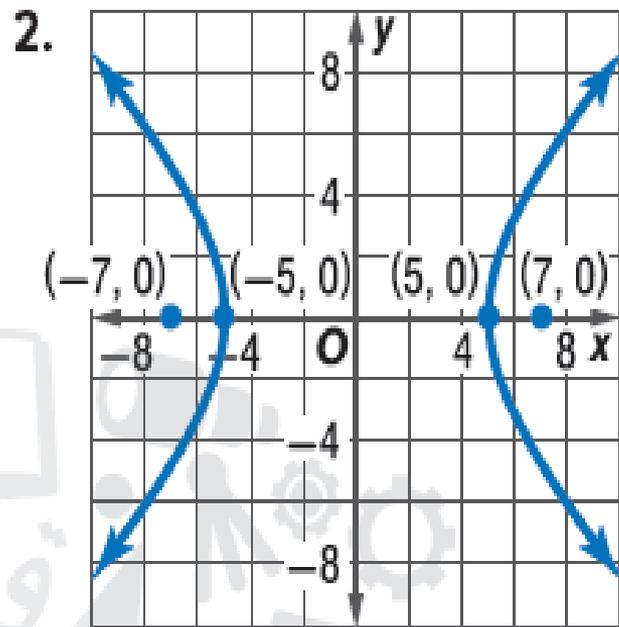
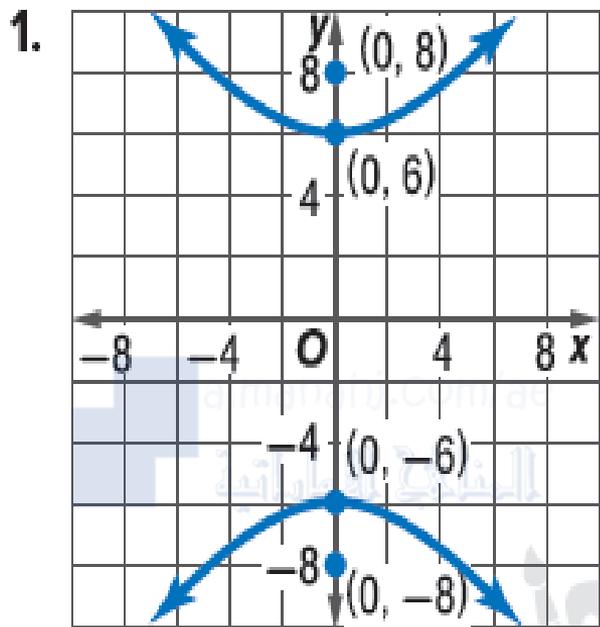


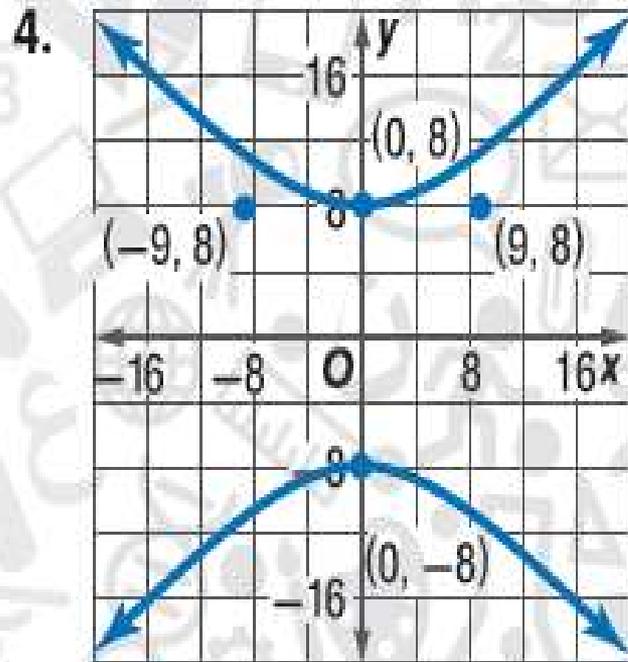
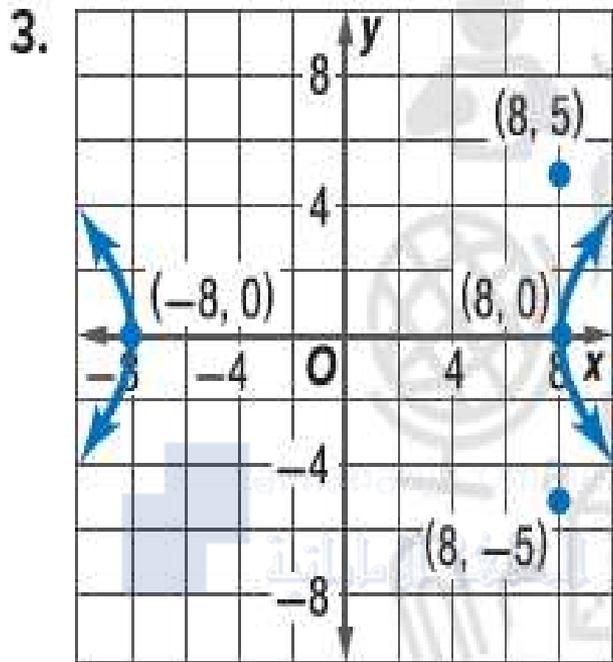


Write an equation for an ellipse that satisfies each set of conditions.

17. vertices at  $(-6, 4)$  and  $(12, 4)$ , co-vertices at  $(3, 12)$  and  $(3, -4)$
18. vertices at  $(-1, 11)$  and  $(-1, 1)$ , co-vertices at  $(-4, 6)$  and  $(2, 6)$
19. center at  $(-2, 6)$ , vertex at  $(-2, 16)$ , co-vertex at  $(1, 6)$
20. center at  $(3, -4)$ , vertex at  $(8, -4)$ , co-vertex at  $(3, -2)$
21. vertices at  $(4, 12)$  and  $(4, -4)$ , co-vertices at  $(1, 4)$  and  $(7, 4)$
22. vertices at  $(-11, 2)$  and  $(-1, 2)$ , co-vertices at  $(-6, 0)$  and  $(-6, 4)$

Write an equation for each hyperbola.







Solve each system of equations.

$$\begin{aligned} 1. \quad & 8y = -10x \\ & y^2 = 2x^2 - 7 \end{aligned}$$

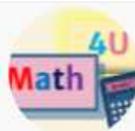
$$\begin{aligned} 2. \quad & x^2 + y^2 = 68 \\ & 5y = -3x + 34 \end{aligned}$$

$$\begin{aligned} 3. \quad & y = 12x - 30 \\ & 4x^2 - 3y = 18 \end{aligned}$$

$$\begin{aligned} 4. \quad & 6y^2 - 27 = 3x \\ & 6y - x = 13 \end{aligned}$$

$$\begin{aligned} 5. \quad & x^2 + y^2 = 16 \\ & x^2 - y^2 = 20 \end{aligned}$$

$$\begin{aligned} 6. \quad & y^2 - 2x^2 = 8 \\ & 3y^2 + x^2 = 52 \end{aligned}$$



Write each pair of parametric equations in rectangular form.  
Then graph the equation. (Example 4)

18.  $x = 3 \cos \theta$  and  $y = 5 \sin \theta$

19.  $x = 7 \sin \theta$  and  $y = 2 \cos \theta$

20.  $x = 6 \cos \theta$  and  $y = 4 \sin \theta$

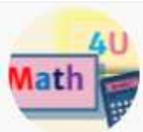
21.  $x = 3 \cos \theta$  and  $y = 3 \sin \theta$

22.  $x = 8 \sin \theta$  and  $y = \cos \theta$

23.  $x = 5 \cos \theta$  and  $y = 6 \sin \theta$

24.  $x = 10 \sin \theta$  and  $y = 9 \cos \theta$

25.  $x = \sin \theta$  and  $y = 7 \cos \theta$



Write a set of parametric equations for the line or line segment with the given characteristics.

41. line with a slope of 3 that passes through  $(4, 7)$
42. line with a slope of  $-0.5$  that passes through  $(3, -2)$
43. line segment with endpoints  $(-2, -6)$  and  $(2, 10)$
44. line segment with endpoints  $(7, 13)$  and  $(13, 11)$

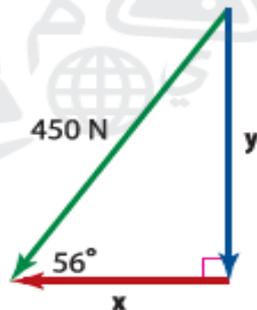
**Real-World Example 6** Resolve a Force into Rectangular Components

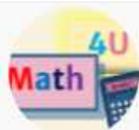
**LAWN CARE** Hala is pushing the handle of a lawn mower with a force of 450 newtons at an angle of  $56^\circ$  with the ground.

- a. Draw a diagram that shows the resolution of the force that Hala exerts into its rectangular components.



Hala's push can be resolved into a horizontal push  $x$  forward and a vertical push  $y$  downward as shown.





b. Find the magnitudes of the horizontal and vertical components of the force.

The horizontal and vertical components of the force form a right triangle. Use the sine or cosine ratios to find the magnitude of each force.

$$\cos 56^\circ = \frac{|x|}{450}$$

Right triangle definitions of cosine and sine

$$\sin 56^\circ = \frac{|y|}{450}$$

$$|x| = 450 \cos 56^\circ$$

Solve for  $x$  and  $y$ .

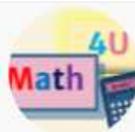
$$|y| = 450 \sin 56^\circ$$

$$|x| \approx 252$$

Use a calculator.

$$|y| \approx 373$$

The magnitude of the horizontal component is about 252 newtons, and the magnitude of the vertical component is about 373 newtons.



Find the component form and magnitude of  $\overrightarrow{AB}$  with the given initial and terminal points. (Examples 1 and 2)

1.  $A(-3, 1), B(4, 5)$

2.  $A(2, -7), B(-6, 9)$

3.  $A(10, -2), B(3, -5)$

4.  $A(-2, 7), B(-9, -1)$

5.  $A(-5, -4), B(8, -2)$

6.  $A(-2, 6), B(1, 10)$

7.  $A(2.5, -3), B(-4, 1.5)$

8.  $A(-4.3, 1.8), B(9.4, -6.2)$



Find the component form of  $v$  with the given magnitude and direction angle. (Example 6)

38.  $|v| = 12, \theta = 60^\circ$

39.  $|v| = 4, \theta = 135^\circ$

40.  $|v| = 6, \theta = 240^\circ$

41.  $|v| = 16, \theta = 330^\circ$

42.  $|v| = 28, \theta = 273^\circ$

43.  $|v| = 15, \theta = 125^\circ$

Use the dot product to find the magnitude of the given vector. (Example 2)

10.  $m = \langle -3, 11 \rangle$

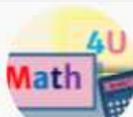
11.  $r = \langle -9, -4 \rangle$

12.  $n = \langle 6, 12 \rangle$

13.  $v = \langle 1, -18 \rangle$

14.  $p = \langle -7, -2 \rangle$

15.  $t = \langle 23, -16 \rangle$



Find the angle  $\theta$  between  $u$  and  $v$  to the nearest tenth of a degree. (Example 3)

16.  $u = \langle 0, -5 \rangle, v = \langle 1, -4 \rangle$

17.  $u = \langle 7, 10 \rangle, v = \langle 4, -4 \rangle$

18.  $u = \langle -2, 4 \rangle, v = \langle 2, -10 \rangle$

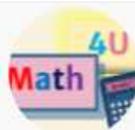
19.  $u = -2i + 3j, v = -4i - 2j$

20.  $u = \langle -9, 0 \rangle, v = \langle -1, -1 \rangle$

21.  $u = -i - 3j, v = -7i - 3j$

22.  $u = \langle 6, 0 \rangle, v = \langle -10, 8 \rangle$

23.  $u = -10i + j, v = 10i - 5j$



Find each of the following for  $x = -9i + 4j + 3k$ ,  
 $y = 6i - 2j - 7k$ , and  $z = -2i + 2j + 4k$ . (Example 5)

42.  $7x + 6y$

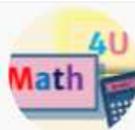
43.  $3x - 5y + 3z$

44.  $4x + 3y + 2z$

45.  $-8x - 2y + 5z$

46.  $-6y - 9z$

47.  $-x - 4y - z$



Find the cross product of  $u$  and  $v$ . Then show that  $u \times v$  is orthogonal to both  $u$  and  $v$ . (Example 3)

16.  $u = \langle -1, 3, 5 \rangle, v = \langle 2, -6, -3 \rangle$

17.  $u = \langle 4, 7, -2 \rangle, v = \langle -5, 9, 1 \rangle$

18.  $u = \langle 3, -6, 2 \rangle, v = \langle 1, 5, -8 \rangle$

19.  $u = \langle 5, -8, 0 \rangle, v = \langle -4, -2, 7 \rangle$

20.  $u = -2i - 2j + 5k, v = 7i + j - 6k$

21.  $u = -4i + j + 8k, v = 3i - 4j - 3k$

Find the volume of the parallelepiped having  $t$ ,  $u$ , and  $v$  as adjacent edges. (Example 6)

30.  $t = \langle -1, -9, 2 \rangle$ ,  $u = \langle 4, -7, -5 \rangle$ ,  $v = \langle 3, -2, 6 \rangle$

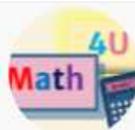
31.  $t = \langle -6, 4, -8 \rangle$ ,  $u = \langle -3, -1, 6 \rangle$ ,  $v = \langle 2, 5, -7 \rangle$

32.  $t = \langle 2, -3, -1 \rangle$ ,  $u = \langle 4, -6, 3 \rangle$ ,  $v = \langle -9, 5, -4 \rangle$

33.  $t = -4i + j + 3k$ ,  $u = 5i + 7j - 6k$ ,  $v = 3i - 2j - 5k$

34.  $t = i + j - 4k$ ,  $u = -3i + 2j + 7k$ ,  $v = 2i - 6j + 8k$

35.  $t = 5i - 2j + 6k$ ,  $u = 3i - 5j + 7k$ ,  $v = 8i - j + 4k$



Find three different pairs of polar coordinates that name the given point if  $-360^\circ \leq \theta \leq 360^\circ$  or  $-2\pi \leq \theta \leq 2\pi$ . (Example 3)

14.  $(1, 150^\circ)$

15.  $(-2, 300^\circ)$

16.  $(4, -\frac{7\pi}{6})$

17.  $(-3, \frac{2\pi}{3})$

18.  $(5, \frac{11\pi}{6})$

19.  $(-5, -\frac{4\pi}{3})$

20.  $(2, -30^\circ)$

21.  $(-1, -240^\circ)$



Find the distance between each pair of points. (Example 5)

30.  $(2, 30^\circ), (5, 120^\circ)$

31.  $(3, \frac{\pi}{2}), (8, \frac{4\pi}{3})$

32.  $(6, 45^\circ), (-3, 300^\circ)$

33.  $(7, -\frac{\pi}{3}), (1, \frac{2\pi}{3})$

34.  $(-5, \frac{7\pi}{6}), (4, \frac{\pi}{6})$

35.  $(4, -315^\circ), (1, 60^\circ)$

36.  $(-2, -30^\circ), (8, 210^\circ)$

37.  $(-3, \frac{11\pi}{6}), (-2, \frac{5\pi}{6})$

38.  $(1, -\frac{\pi}{4}), (-5, \frac{7\pi}{6})$

39.  $(7, -90^\circ), (-4, -330^\circ)$

40.  $(8, -\frac{2\pi}{3}), (4, -\frac{3\pi}{4})$

41.  $(-5, 135^\circ), (-1, 240^\circ)$

In exercises 19–24, find  $\text{comp}_b a$  and  $\text{proj}_b a$ .

19.  $a = \langle 2, 1 \rangle$ ,  $b = \langle 3, 4 \rangle$

20.  $a = 3i + j$ ,  $b = 4i - 3j$

21.  $a = \langle 2, -1, 3 \rangle$ ,  $b = \langle 1, 2, 2 \rangle$

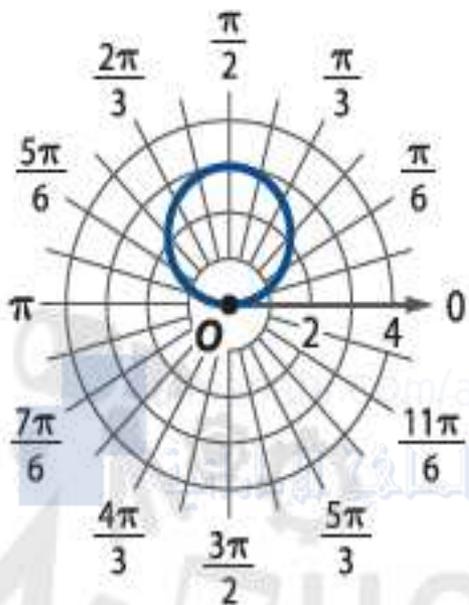
22.  $a = \langle 1, 4, 5 \rangle$ ,  $b = \langle -2, 1, 2 \rangle$

23.  $a = \langle 2, 0, -2 \rangle$ ,  $b = \langle 0, -3, 4 \rangle$

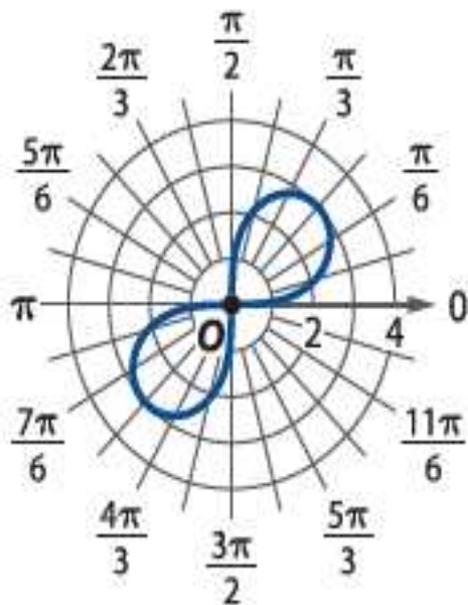
24.  $a = \langle 3, 2, 0 \rangle$ ,  $b = \langle -2, 2, 1 \rangle$

Write an equation for each graph.

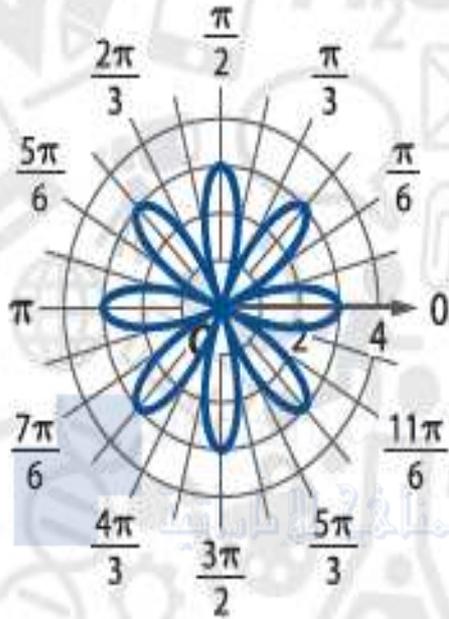
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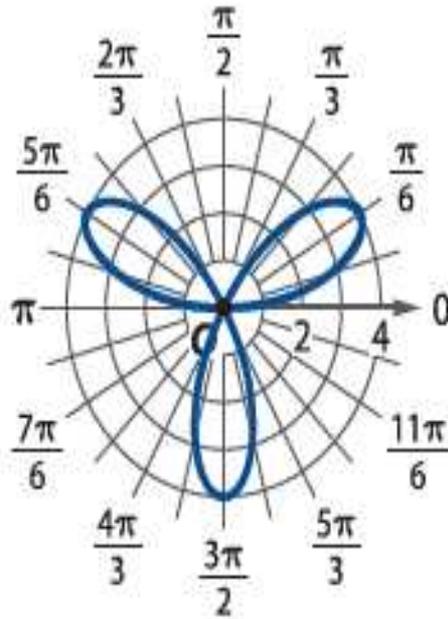
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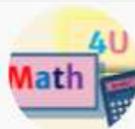


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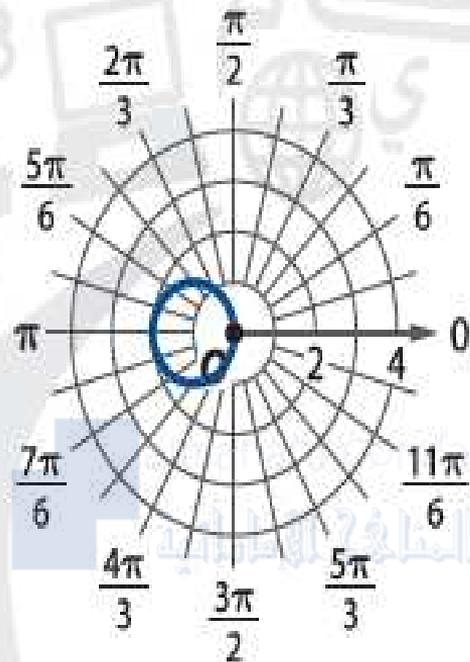


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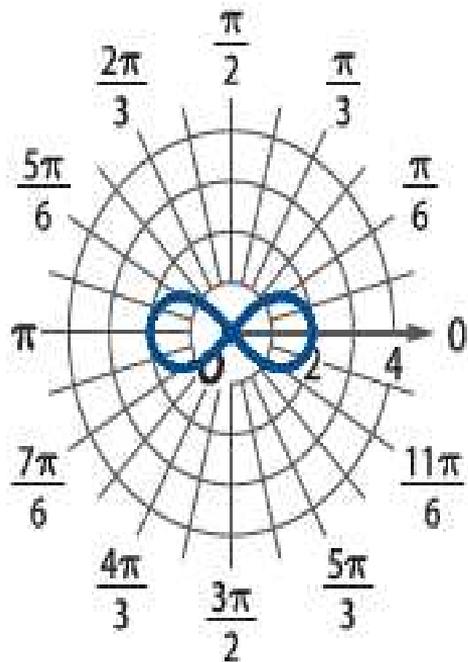


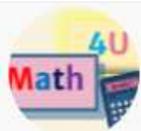


39.



40.





Find the rectangular coordinates for each point with the given polar coordinates. Round to the nearest hundredth, if necessary. (Example 1)

1.  $(2, \frac{\pi}{4})$

2.  $(\frac{1}{4}, \frac{\pi}{2})$

3.  $(5, 240^\circ)$

4.  $(2.5, 250^\circ)$

5.  $(-2, \frac{4\pi}{3})$

6.  $(-13, -70^\circ)$

7.  $(3, \frac{\pi}{2})$

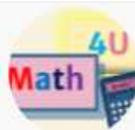
8.  $(\frac{1}{2}, \frac{3\pi}{4})$

9.  $(-2, 270^\circ)$

10.  $(4, 210^\circ)$

11.  $(-1, -\frac{\pi}{6})$

12.  $(5, \frac{\pi}{3})$



Identify the graph of each rectangular equation. Then write the equation in polar form. Support your answer by graphing the polar form of the equation. (Example 4)

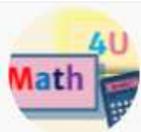
26.  $x = -2$

27.  $(x + 5)^2 + y^2 = 25$

28.  $y = -3$

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29.  $x = y^2$



Write each equation in rectangular form, and then identify its graph. Support your answer by graphing the polar form of the equation. (Example 5)

36.  $r = 3 \sin \theta$

37.  $\theta = -\frac{\pi}{3}$

38.  $r = 10$

39.  $r = 4 \cos \theta$

40.  $\tan \theta = 4$

41.  $r = 8 \csc \theta$

42.  $r = -4$

43.  $\cot \theta = -7$

44.  $\theta = \frac{3\pi}{4}$

45.  $r = \sec \theta$

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## قناة تعليمية لتعليم الرياضيات



لا تنسوا الاشتراك  
في القناة وتفعيل  
زر الجرس



الدخول للقناة

اعداد: طارق عمران

