Student: ____________________ **Date:** ____________________	**Instructor:** Joe Betters **Course:** Pre-Calculus Pre AP (Master Course)	**Assignment:** Chapter 10 Review

1. Find the equation of the parabola described. Find the two points that define the latus rectum, and graph the equation.

Directrix the line $x = -\frac{1}{5}$; vertex at (0, 0)

Choose the correct equation of the parabola.

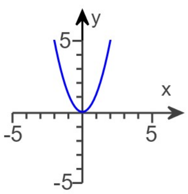
○ **A.** $x^2 = \frac{4}{5}y$ ○ **B.** $y^2 = -\frac{4}{5}x$ ○ **C.** $y^2 = \frac{4}{5}x$ ○ **D.** $x^2 = -\frac{4}{5}y$

Find the two points that define the latus rectum.

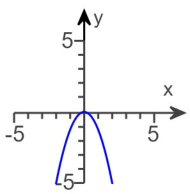
Upper point: (______ , ______) Lower point: (______ , ______)
(Type an integer or a simplified fraction.)

Choose the correct graph of the parabola.

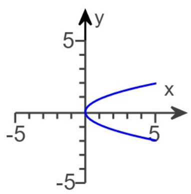
○ **A.**



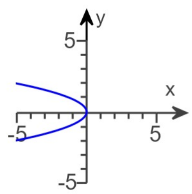
○ **B.**



○ **C.**

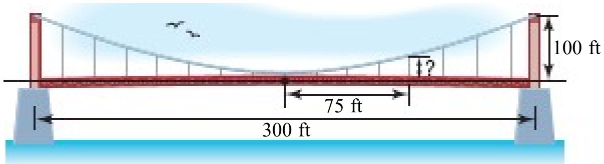


○ **D.**



ID: 10.2.25

2.



The cables of a suspension bridge are in the shape of a parabola, as shown in the figure. The towers supporting the cable are 300 feet apart and 100 feet high. If the cables touch the road surface midway between the towers, what is the height of the cable at a point 75 feet from the center of the bridge?

The cable is ______ feet from the road surface at a point 75 feet from the center of the bridge.

ID: 10.2.67

3. Find an equation for the ellipse. Graph the equation.

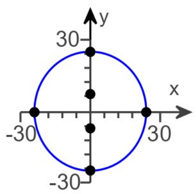
focus at (0,24); vertices at $(0, \pm 25)$

Type the left side of the equation of the ellipse.

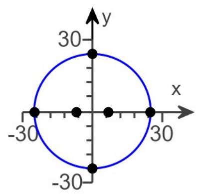
_______ = 1

Which graph shown below is the graph of the ellipse?

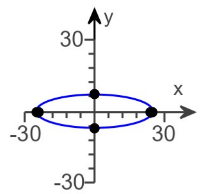
A.



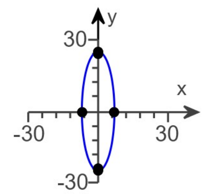
B.



C.

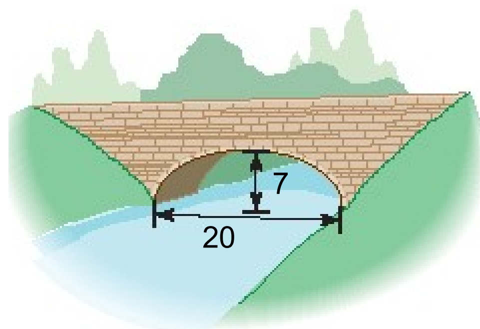


D.



ID: 10.3.33

4. **Semielliptical Arch Bridge** An arch in the shape of the upper half of an ellipse is used to support a bridge that is to span a river 20 meters wide. The center of the arch is 7 meters above the center of the river (see the figure). Write an equation for the ellipse in which the x-axis coincides with the water level and the y-axis passes through the center of the arch.



Type the left side of the equation below.

_______ = 1 (Simplify your answer.)

ID: 10.3.69

5. Find an equation for the hyperbola described below. Graph the equation.

Foci at $(-12, 0)$ and $(12, 0)$; asymptote the line $y = -x$

The transverse axis coincides with the

(1) ________ -axis.

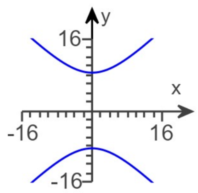
An equation of the hyperbola is

________ − ________ = 1

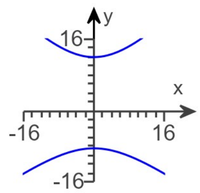
(Use integers or fractions for any numbers in the equation.)

Which of the following is the correct graph?

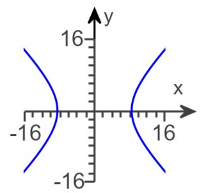
A.



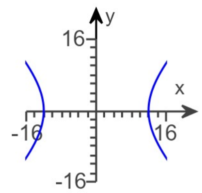
B.



C.



D.



(1) ○ x
○ y

ID: 10.4.27

6. Find an equation for the hyperbola described. Graph the equation.

Center at $(1, -5)$; focus at $(10, -5)$; vertex at $(6, -5)$

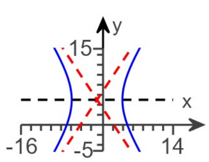
Write an equation for the hyperbola.

________ − ________ = 1

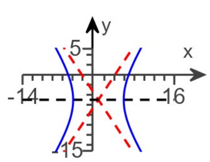
(Type exact answers for each term, using fractions as needed.)

Select the graph which correctly describes the hyperbola.

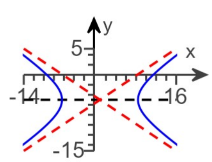
A.



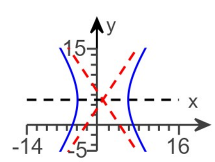
B.



C.



D.



ID: 10.4.41

7. Determine the appropriate rotation formulas to use so that the new equation contains no xy-term.

$$15x^2 - 8\sqrt{3}xy + 7y^2 - 18 = 0$$

Enter the appropriate values and symbols to complete the rotation formulas.

(Example: $x = \frac{3}{5}x' + \frac{4}{5}y'$)

$x =$ ______ x' ______ ______ y' $y =$ ______ x' ______ ______ y'

ID: 10.5.25

8. Rotate the axes so that the new equation contains no xy-term. Discuss and graph the new equation.

$$25x^2 - 10xy + y^2 - 4\sqrt{26}x - 20\sqrt{26}y = 0$$

Choose the conic that matches this equation.

- **A.** Ellipse
- **B.** Parabola
- **C.** Hyperbola
- **D.** The equation does not represent a conic.

Enter the angle of rotation that eliminates the xy-term of the equation of the conic.

______ ° (Round your answer to the nearest whole degree.)

Enter the location of the vertex of the conic.

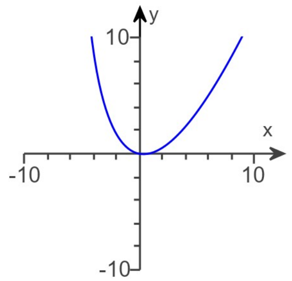
$(h, k) =$ (______ , ______)

Enter the location of the focus of the conic in the x'-y' plane.

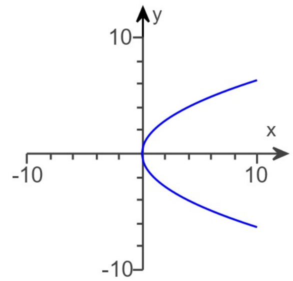
(______ , ______) (Reduce fractions.)

Choose the correct graph of the equation.

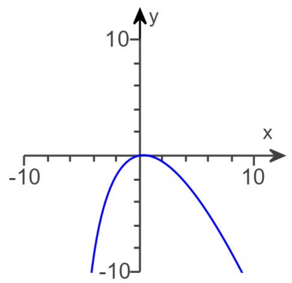
A.



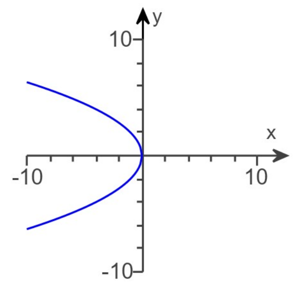
B.



C.



D.



ID: 10.5.37

9. Convert the polar equation to a rectangular equation.

$$r = \frac{7}{4 - \cos\theta}$$

_______ = 0
(Simplify your answer.)

ID: 10.6.31

10. Find a polar equation for a conic with the following properties.

e = 6; a focus at the pole; directrix is parallel to the polar axis 1 unit above the pole

Enter the right side of the polar equation below.

r = _______

ID: 10.6.41

11. Find two different parametric equations for the rectangular equation given.

$y = 8x - 2$

(a) Substitute x = t.

y = _______

(b) Substitute y = t.

x = _______

ID: 10.7.27

12. Find parametric equations for an object moving clockwise along the ellipse $\frac{x^2}{9} + \frac{y^2}{4} = 1$ beginning at (3,0) and requiring 3 seconds for a complete revolution.

x = _______

y = _______

ID: 10.7.39

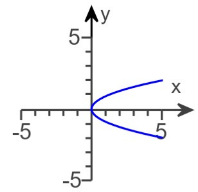
1. C. $y^2 = \frac{4}{5}x$

$\frac{1}{5}$

$\frac{2}{5}$

$\frac{1}{5}$

$-\frac{2}{5}$



C.

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2. 25

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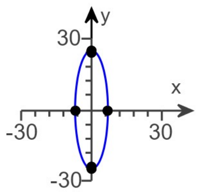
3. $\frac{x^2}{49} + \frac{y^2}{625}$



D.

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4. $\frac{x^2}{100} + \frac{y^2}{49}$

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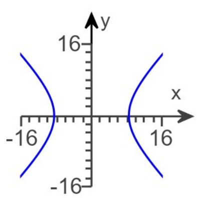
5. (1) x

$\frac{x^2}{72}$

$\frac{y^2}{72}$



C.

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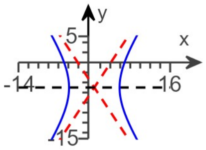
6. $\frac{(x-1)^2}{25}$

$\frac{(y+5)^2}{56}$



B.

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7. $\frac{1}{2}$

$-$

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

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

$+$

$\frac{1}{2}$

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8. B. Parabola

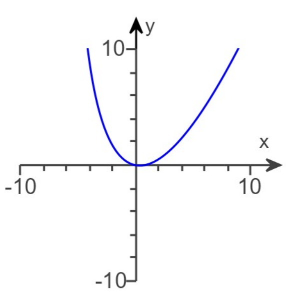
79

0

0

1

0



A.

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9. $16y^2 + 15x^2 - 14x - 49$

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10. $\dfrac{6}{1+6\sin\theta}$

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11. $8t-2$

$\dfrac{t+2}{8}$

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12. $3\cos\left(\dfrac{-2\pi}{3}t\right)$

$2\sin\left(\dfrac{-2\pi}{3}t\right)$
