

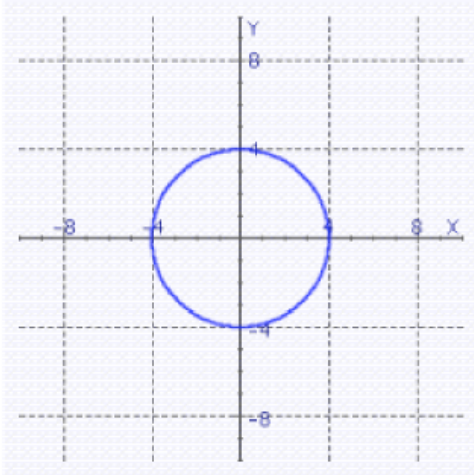
## Conic Sections ... Set 3

### Conic Sections Practice Test

1. Give the coordinates of the circle's center and its radius.

$$(x - 2)^2 + (y + 9)^2 = 1$$

2. Find the equation of the circle graphed below.



- A)  $x^2 + y^2 = 4$       C)  $x^2 + y^2 = 16$       E)  $x^2 + y = 16$   
B)  $y^2 = x^2 + 16$       D)  $x^2 + y^2 = 1$

## Conic Sections ... Set 3

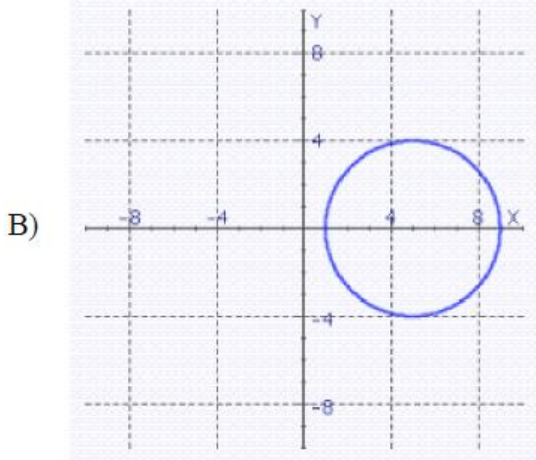
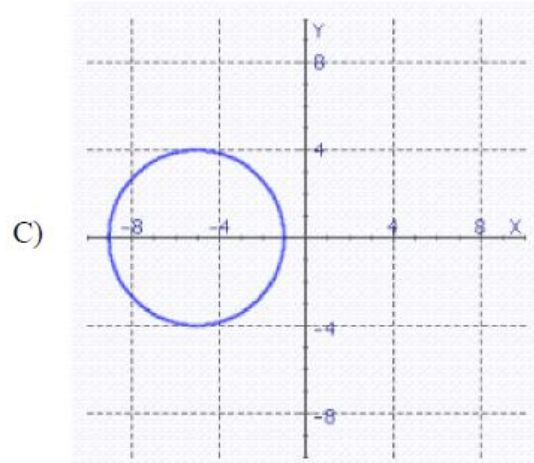
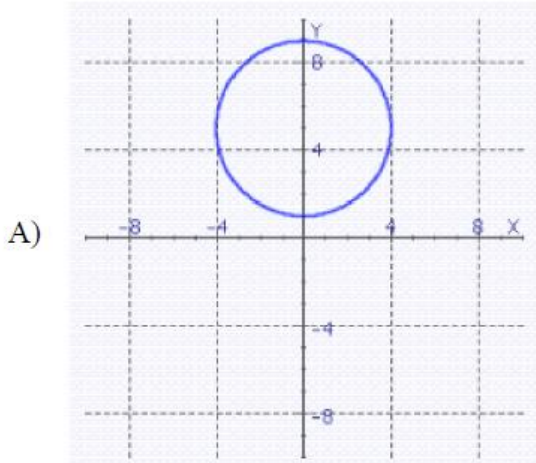
### Answers

1.  $(2, -9), r = 1$
2. C

## Conic Sections ... Set 3

3. Graph the following equation.

$$x^2 - 10x + y^2 = -9$$



4. Find the vertex and focus of the parabola.

$$(y - 2)^2 + 16(x - 3) = 0$$

- A) vertex:  $(-3, -2)$       focus:  $(-3, 14)$   
B) vertex:  $(-3, -2)$       focus:  $(-3, -18)$   
C) vertex:  $(-3, -2)$       focus:  $(-7, -2)$   
D) vertex:  $(3, 2)$       focus:  $(-1, 2)$

## Conic Sections ... Set 3

### *Answers*

3. B

4. D

## Conic Sections ... Set 3

5. Find the standard form of the equation of the parabola with the given characteristic and vertex at the origin.

focus:  $(0, 7)$

A)  $x^2 = 28y$

C)  $x^2 = -7y$

E)  $y^2 = 7x$

B)  $x^2 = 7y$

D)  $y^2 = 28x$

6. Find the standard form of the equation of the parabola with the given characteristic and vertex at the origin.

directrix:  $x = 1$

A)  $x^2 = -4y$

C)  $x^2 = y$

E)  $y^2 = -4x$

B)  $x^2 = 4y$

D)  $y^2 = x$

7. Find the vertex and focus of the parabola.

$$y^2 = -\frac{9}{8}x$$

A) vertex:  $\left(0, -\frac{5}{4}\right)$  focus:  $\left(-\frac{9}{8}, -\frac{9}{8}\right)$

B) vertex:  $(0, 0)$  focus:  $\left(0, -\frac{9}{8}\right)$

C) vertex:  $(0, 0)$  focus:  $\left(-\frac{9}{8}, 0\right)$

D) vertex:  $(0, 0)$  focus:  $\left(-\frac{9}{32}, 0\right)$

8. Find the equation of the parabola with vertex at  $(5, 4)$  and focus at  $(-3, 4)$ .

A)  $(y - 4)^2 = -32(x - 5)$

D)  $(y + 4)^2 = -32(x - 5)$

B)  $(y - 4)^2 = 32(x - 5)$

E)  $(y - 4)^2 = 8(x - 5)$

C)  $(y + 4)^2 = 32(x + 5)$

9. Find the equation of the parabola with vertex at  $(0, 0)$  and focus at  $(0, 5)$ . Express the equation in standard form.

## Conic Sections ... Set 3

### Answers

5. A

6. E

7. D

8. A

9.  $x^2 = 20y$

## Conic Sections ... Set 3

10. Find the center and vertices of the ellipse.

$$\frac{x^2}{49} + \frac{y^2}{4} = 1$$

- A) center: (7, 0)      vertices: (0, -2), (0, 2)
- B) center: (0, 0)      vertices: (-2, 0), (2, 0)
- C) center: (0, 0)      vertices: (0, -7), (0, 7)
- D) center: (0, 0)      vertices: (-7, 0), (7, 0)

11. Find the center and foci of the ellipse.

$$\frac{(x+5)^2}{5} + \frac{(y+9)^2}{9}$$

- A) center: (5, 9)      foci: (5, 7), (5, 11)
- B) center: (-5, -9)      foci: (-5, -11), (-5, -7)
- C) center: (-5, -9)      foci: (-7, -9), (-3, -9)
- D) center: (5, 9)      foci: (3, -9), (7, -9)

12. Find the center and vertices of the ellipse.

$$4x^2 + 9y^2 - 24x + 72y + 144 = 0$$

- A) center: (-4, 3)      vertices: (-7, 3), (-1, 3)
- B) center: (-3, 4)      vertices: (-5, 4), (-1, 4)
- C) center: (3, -4)      vertices: (1, -4), (5, -4)
- D) center: (3, -4)      vertices: (0, -4), (6, -4)
- E) center: (-3, 4)      vertices: (-6, 4), (0, 4)

## Conic Sections ... Set 3

### *Answers*

10. D

11. B

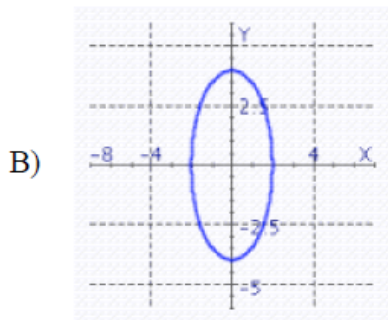
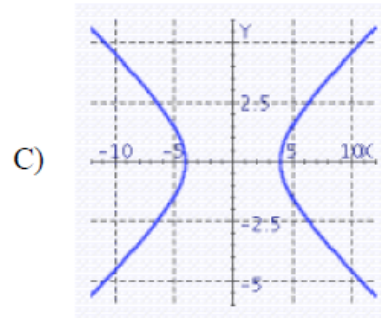
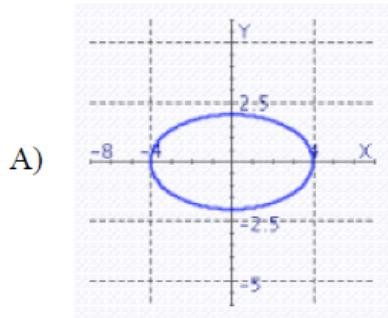
12. D



## Conic Sections ... Set 3

13. Identify the graph of the following ellipse.

$$\frac{x^2}{16} + \frac{y^2}{4} = 1$$



14. Find the center and vertices of the hyperbola.

$$11x^2 - 25y^2 + 22x + 250y - 889 = 0$$

- A) center:  $(1, -5)$ , vertices:  $(1, -10)$ ,  $(1, 0)$
- B) center:  $(-1, 5)$ , vertices:  $(-1, 0)$ ,  $(-1, 10)$
- C) center:  $(-1, 5)$ , vertices:  $(-6, 5)$ ,  $(4, 5)$
- D) center:  $(1, -5)$ , vertices:  $(-4, -5)$ ,  $(6, -5)$

## Conic Sections ... Set 3

### *Answers*

13. A

14. C

## Conic Sections ... Set 3

15. Find the vertices and asymptotes of the hyperbola.

$$9y^2 - 16x^2 = 144$$

- A) vertices:  $(0, \pm 4)$       asymptote:  $y = \pm \frac{4}{3}x$   
B) vertices:  $(0, \pm 4)$       asymptote:  $y = \pm \frac{3}{4}x$   
C) vertices:  $(\pm 4, 0)$       asymptote:  $y = \pm \frac{4}{3}x$   
D) vertices:  $(\pm 4, 0)$       asymptote:  $y = \pm \frac{3}{4}x$

16. Find the standard form of the equation of the hyperbola with the given characteristics.

vertices:  $(0, \pm 6)$       foci:  $(0, \pm 7)$

A)  $\frac{y^2}{36} - \frac{x^2}{49} = 1$

C)  $\frac{x^2}{36} - \frac{y^2}{13} = 1$

B)  $\frac{y^2}{36} - \frac{x^2}{13} = 1$

D)  $\frac{x^2}{36} - \frac{y^2}{13} = 49$

## Conic Sections ... Set 3

### *Answers*

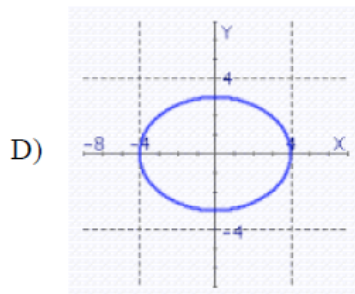
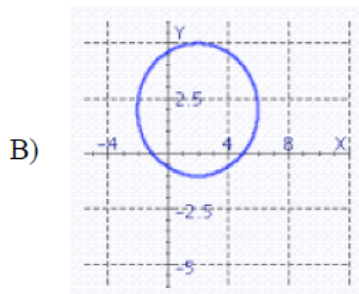
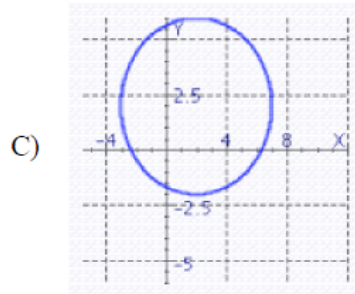
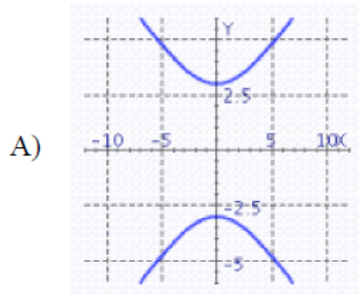
15. A

16. B

## Conic Sections ... Set 3

17. Find the graph of the following ellipse.

$$9x^2 + 16y^2 - 36x - 64y + 44 = 0$$



18. Write the equation of the ellipse that has its center at the origin with focus at (0, 4) and vertex at (0, 7).

A)  $\frac{x^2}{49} + \frac{y^2}{33} = 1$

C)  $\frac{x^2}{33} + \frac{y^2}{49} = -1$

B)  $\frac{x^2}{33} - \frac{y^2}{49} = 1$

D)  $\frac{x^2}{33} + \frac{y^2}{49} = 1$

19. Find the center and vertices of the ellipse.

$$x^2 + 9y^2 + 16x - 54y + 136 = 0$$

- |                    |                             |
|--------------------|-----------------------------|
| A) center: (3, -8) | vertices: (0, -8), (6, -8)  |
| B) center: (8, -3) | vertices: (7, -3), (9, -3)  |
| C) center: (-8, 3) | vertices: (-9, 3), (-7, 3)  |
| D) center: (-8, 3) | vertices: (-11, 3), (-5, 3) |
| E) center: (8, -3) | vertices: (5, -3), (11, -3) |

## Conic Sections ... Set 3

### *Answers*

17. B

18. D

19. D

## Conic Sections ... Set 3

20. Find the standard form of the equation of the ellipse with the following characteristics.

foci:  $(\pm 4, 0)$       major axis of length: 12

A)  $\frac{x^2}{36} + \frac{y^2}{20} = 1$

D)  $\frac{x^2}{144} + \frac{y^2}{16} = 1$

B)  $\frac{x^2}{36} + \frac{y^2}{16} = 1$

E)  $\frac{x^2}{144} + \frac{y^2}{128} = 1$

C)  $\frac{x^2}{16} + \frac{y^2}{36} = 1$

21. Find the standard form of the equation of the hyperbola with the given characteristics.

vertices:  $(-2, -4), (-2, 6)$       foci:  $(-2, -5), (-2, 7)$

A)  $\frac{(y-1)^2}{25} - \frac{(x+2)^2}{11} = 1$

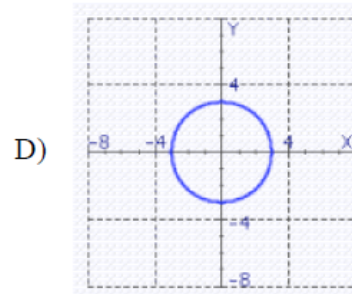
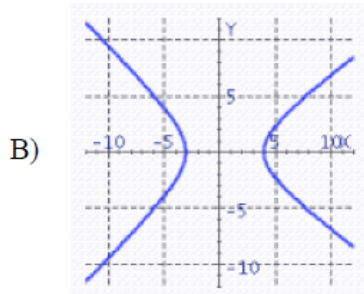
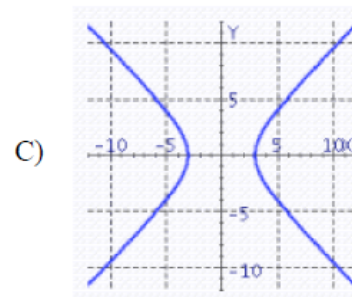
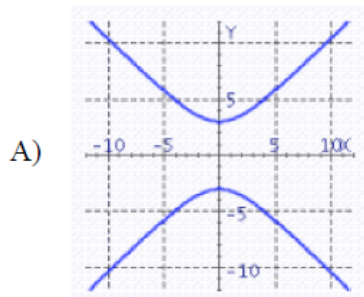
C)  $\frac{(y-2)^2}{11} - \frac{(x+1)^2}{25} = 1$

B)  $\frac{(y+1)^2}{25} - \frac{(x-2)^2}{11} = 1$

D)  $\frac{(y-1)^2}{25} - \frac{(x+2)^2}{36} = 1$

22. Graph the hyperbola.

$$9x^2 - 9y^2 = 81$$



## Conic Sections ... Set 3

### *Answers*

20. A

21. A

22. C



## Conic Sections ... Set 3

23. Identify the conic by writing the equation in standard form.

$$10y^2 - 20x^2 + 60y + 160x - 255 = 0$$

A)  $\frac{(y-3)^2}{\frac{5}{2}} - \frac{(x-4)^2}{\frac{5}{4}} = 1$ ; hyperbola

B)  $\frac{(y+3)^2}{\frac{5}{2}} - \frac{(x-4)^2}{\frac{5}{4}} = 1$ ; hyperbola

C)  $\frac{(y+3)^2}{\frac{97}{2}} - \frac{(x-4)^2}{\frac{97}{4}} = 1$ ; hyperbola

24. Identify the conic by writing the equation in standard form.

$$4x^2 + 4y^2 + 40x + 16y + 40 = 0$$

A)  $(x+5)^2 + (y+2)^2 = 19$ ; circle

B)  $(x+5)^2 + (y+2)^2 = 39$ ; circle

C)  $\frac{(x+5)^2}{\frac{11}{4}} + \frac{(y+2)^2}{\frac{11}{4}} = 1$ ; ellipse

## Conic Sections ... Set 3

### *Answers*

23. B

24. A