

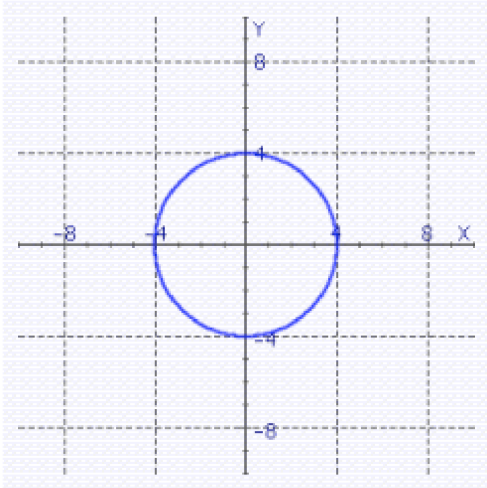
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## Conic Sections Practice Test

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)  $x^2 + y^2 = 16$

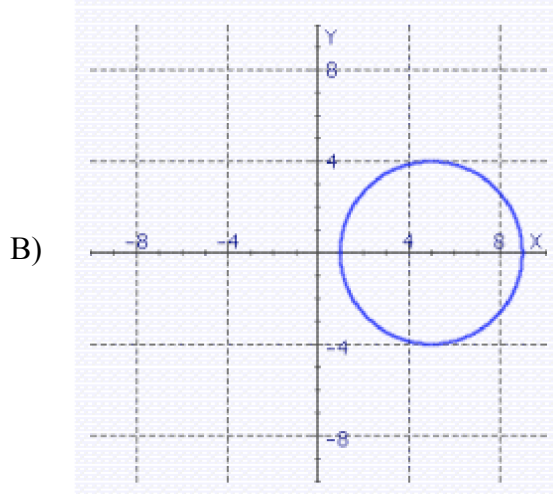
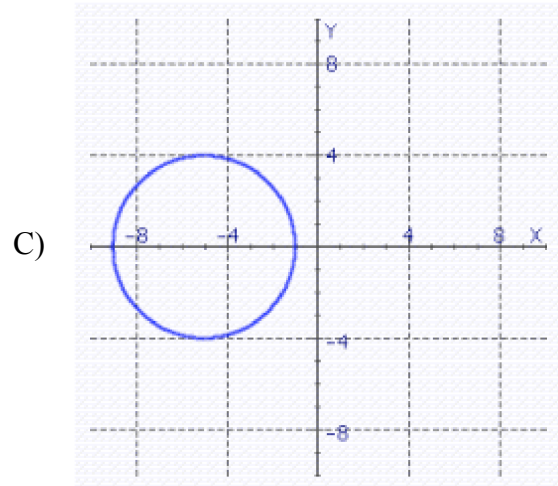
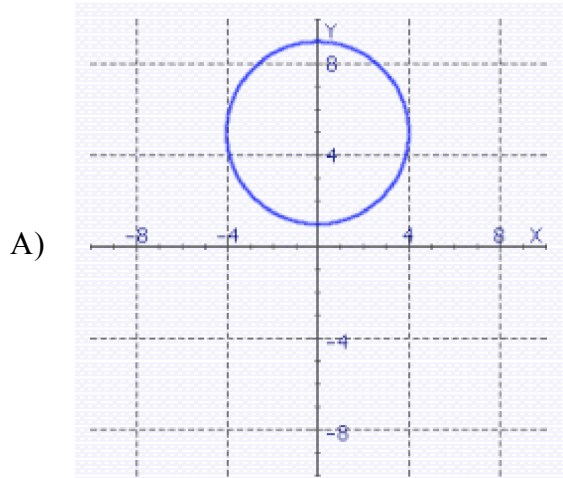
E)  $x^2 + y = 16$

B)  $y^2 = x^2 + 16$

D)  $x^2 + y^2 = 1$

\_\_\_\_\_ 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:  $(-1, 2)$

- \_\_\_\_\_ 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.

\_\_\_\_\_ 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)

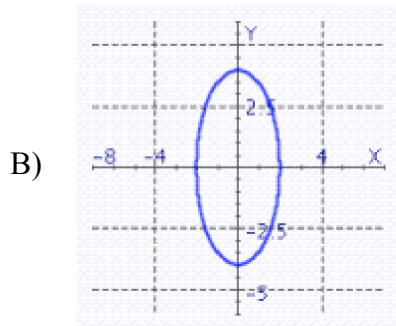
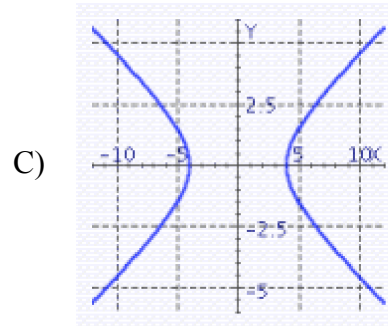
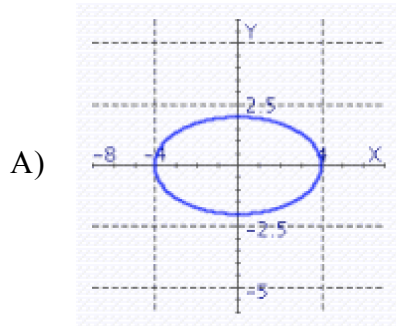
\_\_\_\_\_ 12. Find the center and vertices of the ellipse.

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

- 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)

\_\_\_\_\_ 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)

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

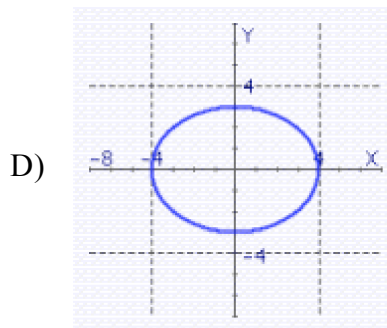
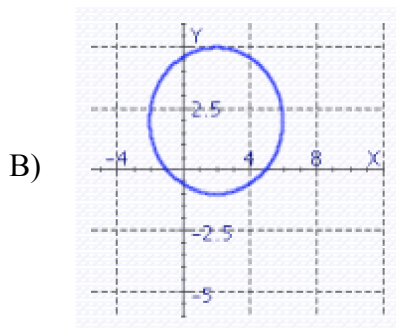
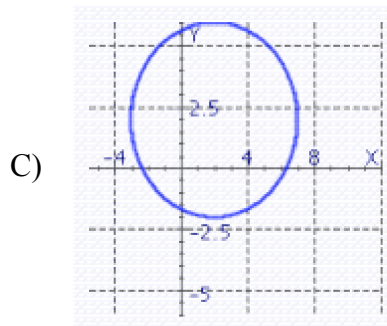
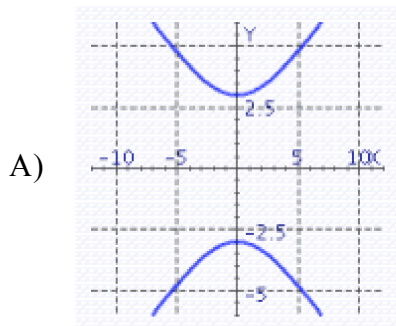
C)  $\frac{x^2}{36} - \frac{y^2}{13} = 1$

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

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

\_\_\_\_\_ 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) |

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

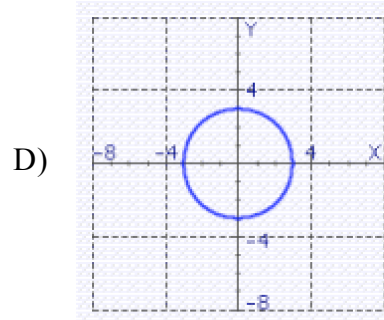
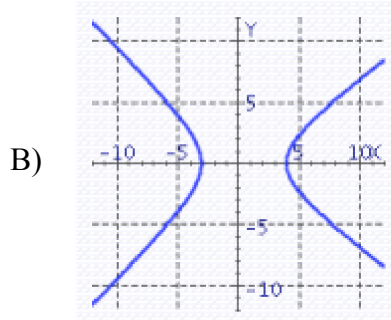
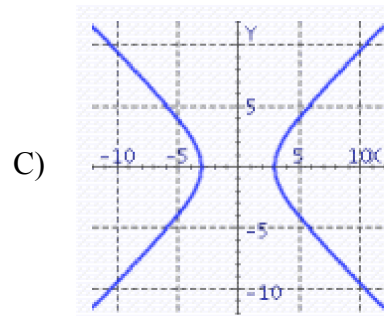
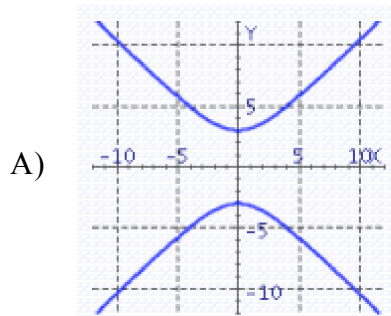
C)  $\frac{(y-2)^2}{11} - \frac{(x+1)^2}{25} = 1$

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.

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





\_\_\_\_\_ 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 Practice Test  
Answer Section**

1.  $(2, -9), r = 1$
2. C
3. B
4. D
5. A
6. E
7. D
8. A
9.  $x^2 = 20y$
10. D
11. B
12. D
13. A
14. C
15. A
16. B
17. B
18. D
19. D
20. A
21. A
22. C
23. B
24. A