

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

List the intercepts for the graph of the equation.

1)  $y = x - 6$  1) \_\_\_\_\_  
A) (-6, 0), (0, 6)      B) (-6, 0), (0, -6)      C) (6, 0), (0, 6)      D) (6, 0), (0, -6)

2)  $y = 4x$  2) \_\_\_\_\_  
A) (4, 0)      B) (0, 4)      C) (0, 0)      D) (4, 4)

3)  $y^2 = x + 16$  3) \_\_\_\_\_  
A) (0, -4), (16, 0), (0, 4)      B) (-4, 0), (0, -16), (4, 0)  
C) (0, -4), (-16, 0), (0, 4)      D) (4, 0), (0, 16), (0, -16)

4)  $y = \sqrt[6]{x}$  4) \_\_\_\_\_  
A) (1, 1)      B) (0, 0)      C) (1, 0)      D) (0, 1)

5)  $x^2 + y - 49 = 0$  5) \_\_\_\_\_  
A) (7, 0), (0, 49), (0, -49)      B) (-7, 0), (0, 49), (7, 0)  
C) (0, -7), (49, 0), (0, 7)      D) (-7, 0), (0, -49), (7, 0)

6)  $4x^2 + 9y^2 = 36$  6) \_\_\_\_\_  
A) (-4, 0), (-9, 0), (9, 0), (4, 0)      B) (-3, 0), (0, -2), (0, 2), (3, 0)  
C) (-9, 0), (0, -4), (0, 4), (9, 0)      D) (-2, 0), (-3, 0), (3, 0), (2, 0)

7)  $16x^2 + y^2 = 16$  7) \_\_\_\_\_  
A) (-1, 0), (0, -4), (0, 4), (1, 0)      B) (-16, 0), (0, -1), (0, 1), (16, 0)  
C) (-4, 0), (0, -1), (0, 1), (4, 0)      D) (-1, 0), (0, -16), (0, 16), (1, 0)

8)  $y = x^3 - 27$  8) \_\_\_\_\_  
A) (0, -27), (3, 0)      B) (0, -3), (-3, 0)      C) (-27, 0), (0, 3)      D) (0, -3), (0, 3)

9)  $y = x^4 - 16$  9) \_\_\_\_\_  
A) (0, 16), (-2, 0), (2, 0)      B) (0, -16), (-2, 0), (2, 0)  
C) (0, 16)      D) (0, -16)

10)  $y = x^2 + 16x + 63$  10) \_\_\_\_\_  
A) (0, -7), (0, -9), (63, 0)      B) (-7, 0), (-9, 0), (0, 63)  
C) (0, 7), (0, 9), (63, 0)      D) (7, 0), (9, 0), (0, 63)

11)  $y = x^2 + 4$  11) \_\_\_\_\_  
A) (4, 0)      B) (0, 4), (-2, 0), (2, 0)  
C) (0, 4)      D) (4, 0), (0, -2), (0, 2)

12)  $y = \frac{4x}{x^2 + 16}$  12) \_\_\_\_\_  
A) (-4, 0), (0, 0), (4, 0)      B) (0, 0)  
C) (0, -4), (0, 0), (0, 4)      D) (-16, 0), (0, 0), (16, 0)

13)  $y = \frac{x^2 - 64}{8x^4}$

13) \_\_\_\_\_

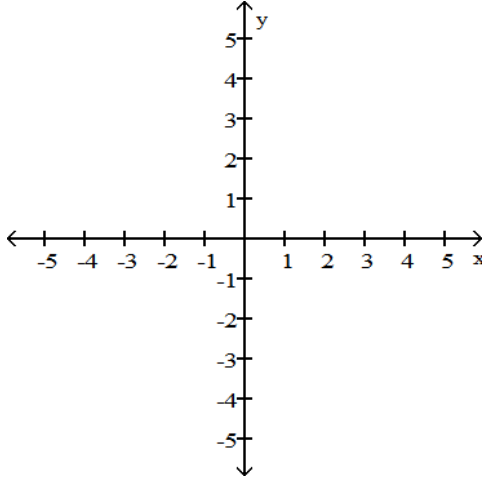
- A) (-64, 0), (0, 0), (64, 0)
- C) (-8, 0), (8, 0)

- B) (0, -8), (0, 8)
- D) (0, 0)

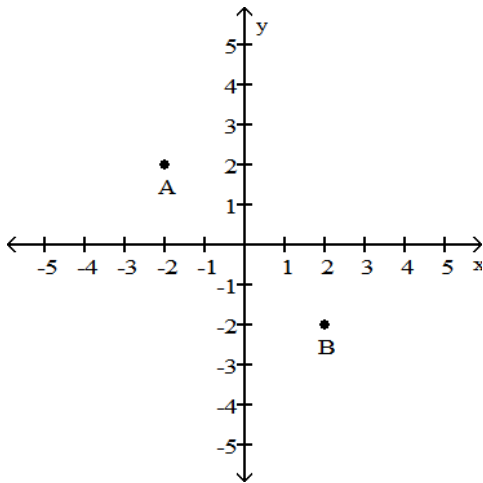
Plot the point A. Plot the point B that has the given symmetry with point A.

14) A = (-2, 2); B is symmetric to A with respect to the origin

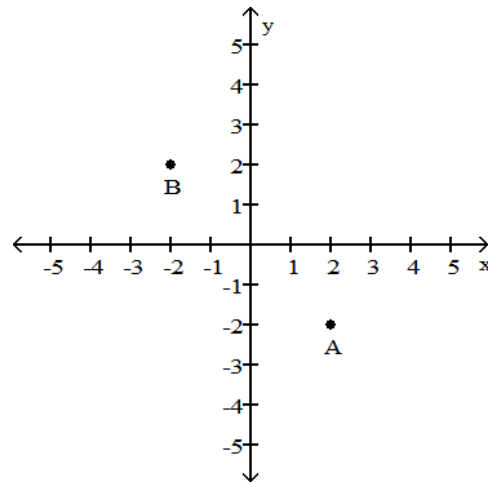
14) \_\_\_\_\_



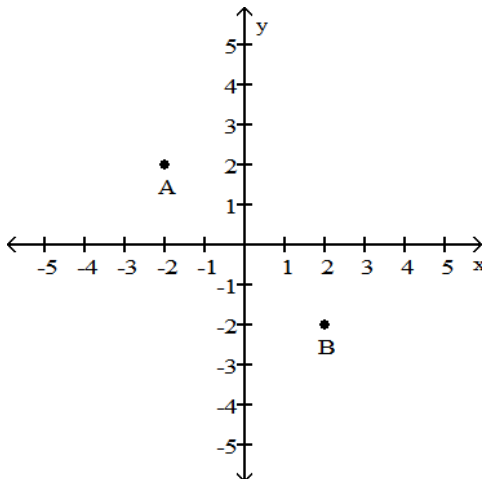
A)



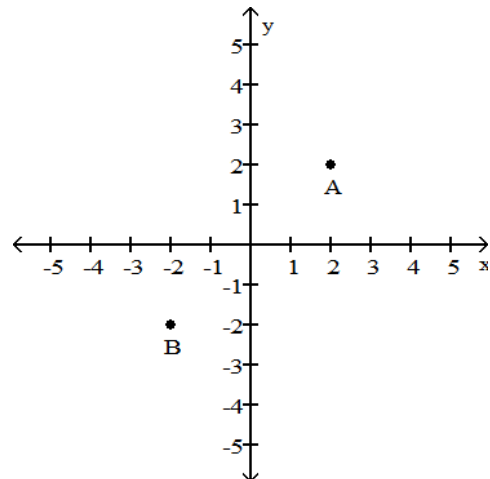
B)



C)

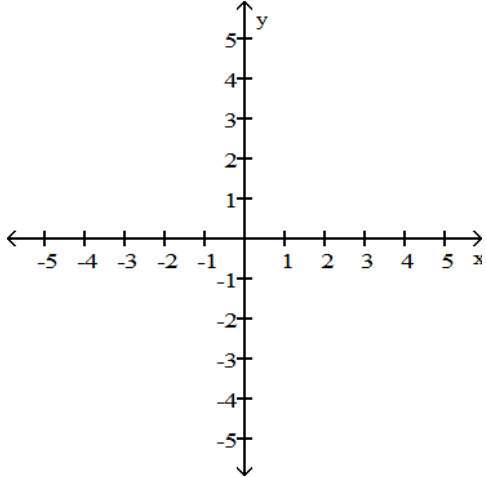


D)

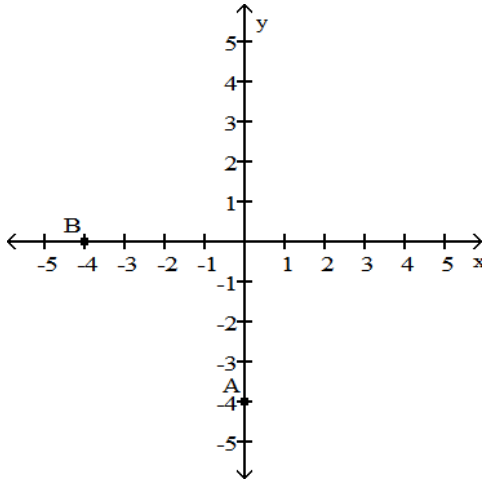


15)  $A = (0, -4)$ ; B is symmetric to A with respect to the origin

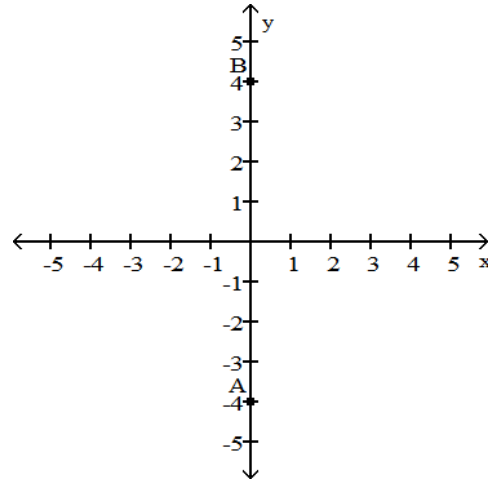
15) \_\_\_\_\_



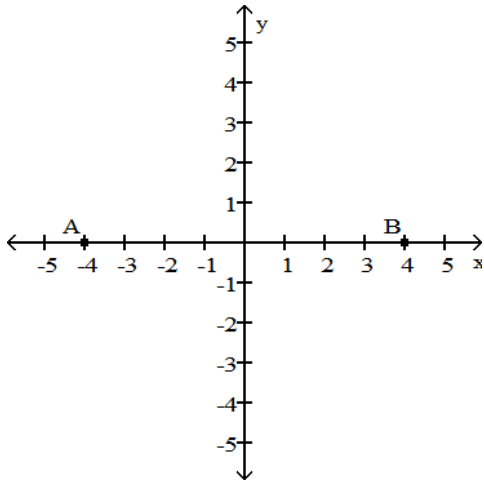
A)



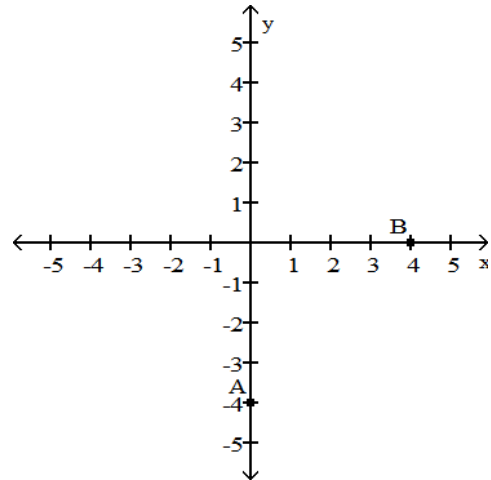
B)



C)



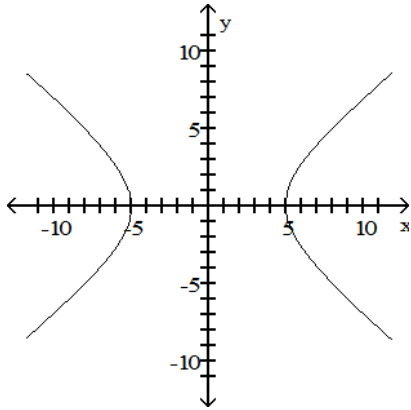
D)



List the intercepts of the graph. Tell whether the graph is symmetric with respect to the x-axis, y-axis, origin, or none of these.

16)

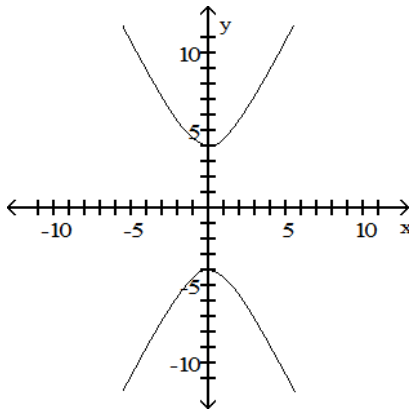
16) \_\_\_\_\_



- A) intercepts: (0, -5) and (0, 5)  
symmetric with respect to y-axis
- B) intercepts: (0, -5) and (0, 5)  
symmetric with respect to x-axis, y-axis, and origin
- C) intercepts: (-5, 0) and (5, 0)  
symmetric with respect to x-axis, y-axis, and origin
- D) intercepts: (-5, 0) and (5, 0)  
symmetric with respect to origin

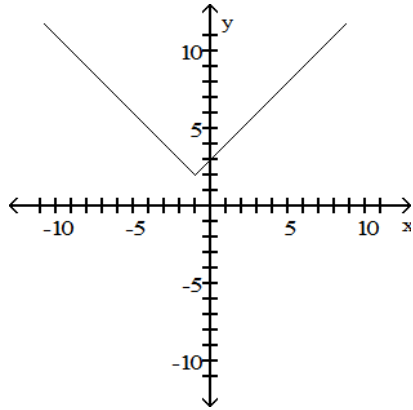
17)

17) \_\_\_\_\_



- A) intercepts: (4, 0) and (-4, 0)  
symmetric with respect to y-axis
- B) intercepts: (0, 4) and (0, -4)  
symmetric with respect to x-axis, y-axis, and origin
- C) intercepts: (0, 4) and (0, -4)  
symmetric with respect to origin
- D) intercepts: (4, 0) and (-4, 0)  
symmetric with respect to x-axis, y-axis, and origin

18)

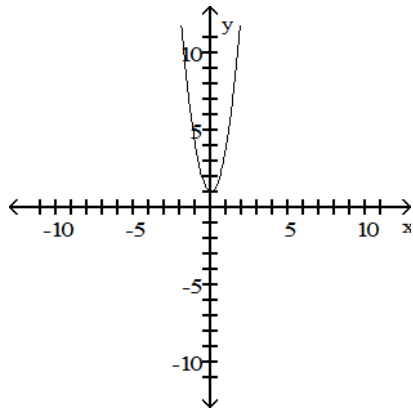


18) \_\_\_\_\_

- A) intercept: (3, 0)  
no symmetry
- C) intercept: (0, 3)  
no symmetry

- B) intercept: (0, 3)  
symmetric with respect to x-axis
- D) intercept: (3, 0)  
symmetric with respect to y-axis

19)



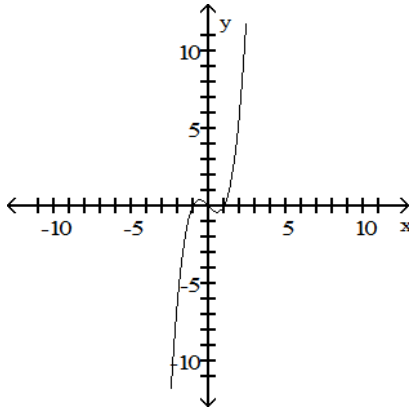
19) \_\_\_\_\_

- A) intercept: (0, 1)  
symmetric with respect to y-axis
- C) intercept: (1, 0)  
symmetric with respect to x-axis

- B) intercept: (0, 1)  
symmetric with respect to origin
- D) intercept: (1, 0)  
symmetric with respect to y-axis

20)

20) \_\_\_\_\_

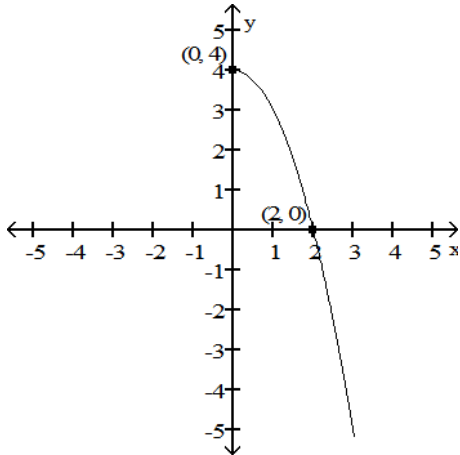


- A) intercepts:  $(-1, 0)$ ,  $(0, 0)$ ,  $(1, 0)$   
symmetric with respect to  $y$ -axis
- B) intercepts:  $(-1, 0)$ ,  $(0, 0)$ ,  $(1, 0)$   
symmetric with respect to  $x$ -axis
- C) intercepts:  $(-1, 0)$ ,  $(0, 0)$ ,  $(1, 0)$   
symmetric with respect to  $x$ -axis,  $y$ -axis, and origin
- D) intercepts:  $(-1, 0)$ ,  $(0, 0)$ ,  $(1, 0)$   
symmetric with respect to origin

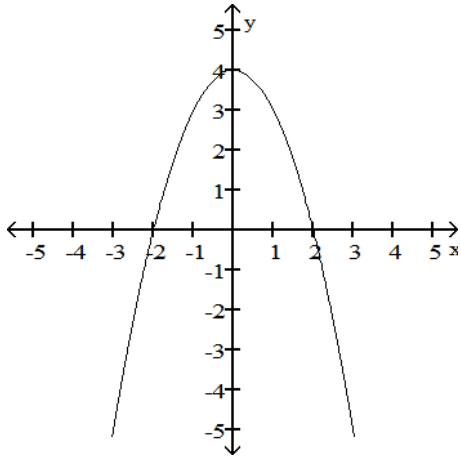
Draw a complete graph so that it has the given type of symmetry.

21) Symmetric with respect to the  $y$ -axis

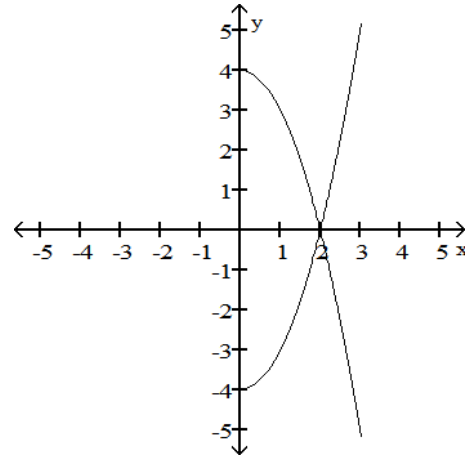
21) \_\_\_\_\_



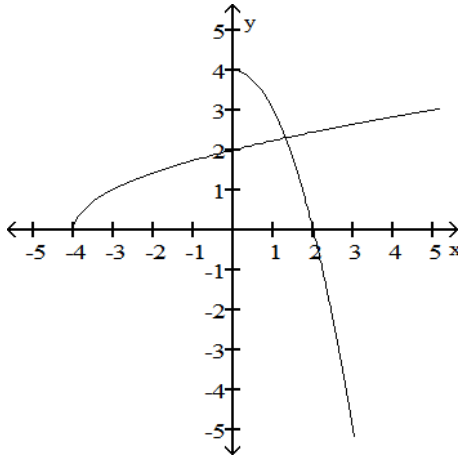
A)



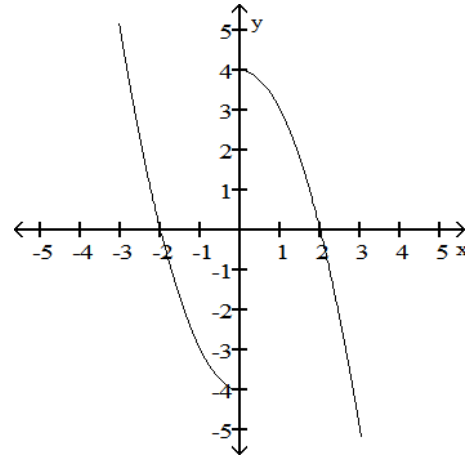
B)



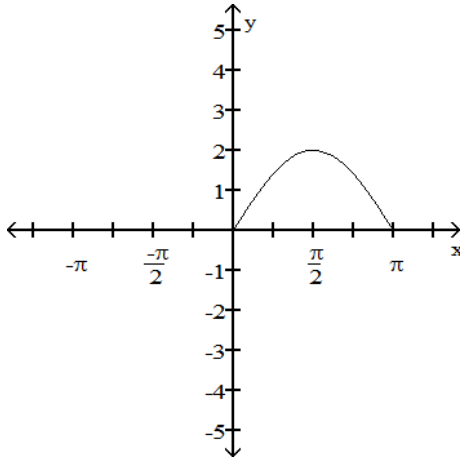
C)



D)

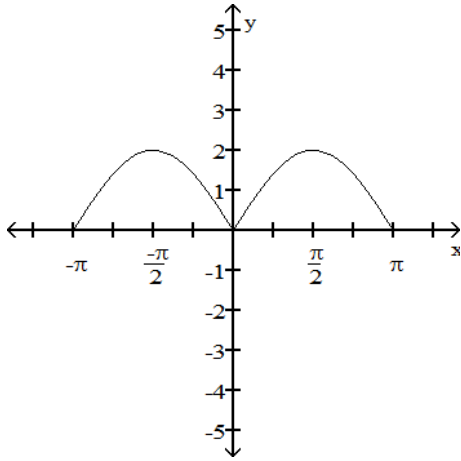


22) origin

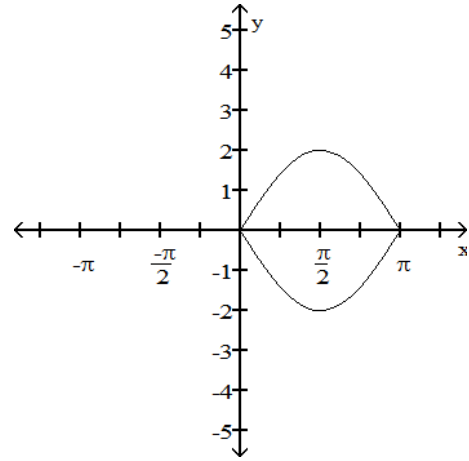


22) \_\_\_\_\_

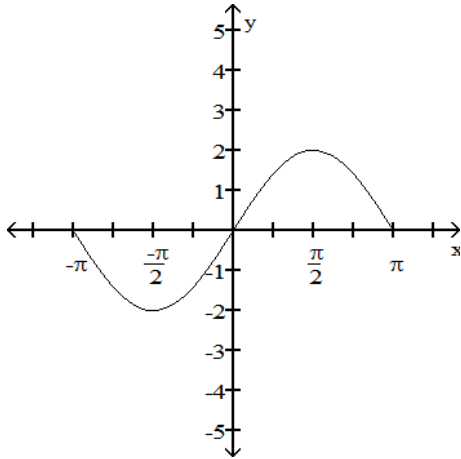
A)



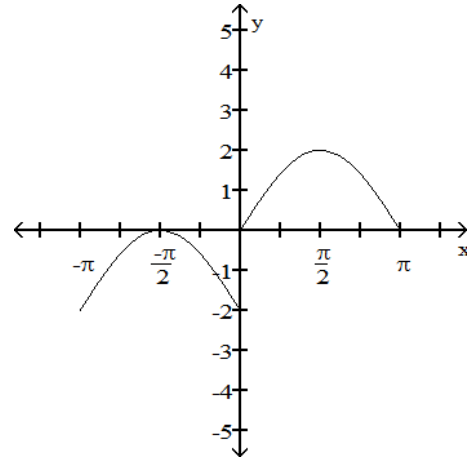
B)



C)

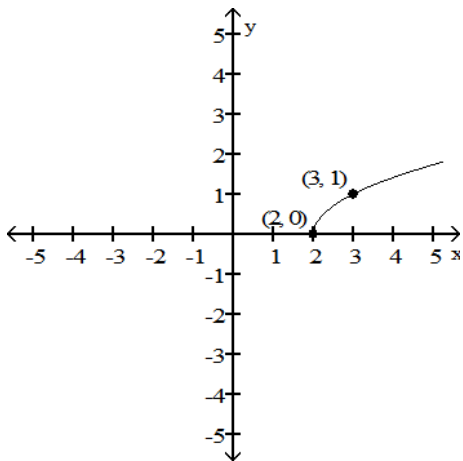


D)



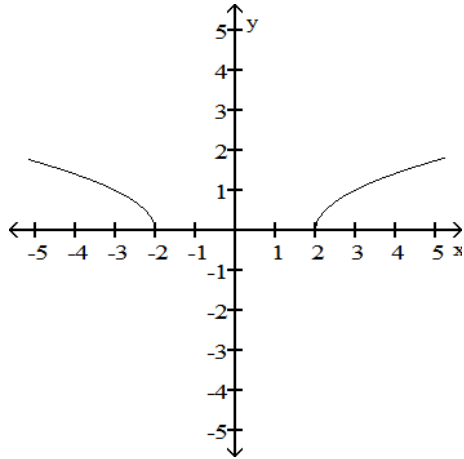
23) Symmetric with respect to the x-axis

23) \_\_\_\_\_

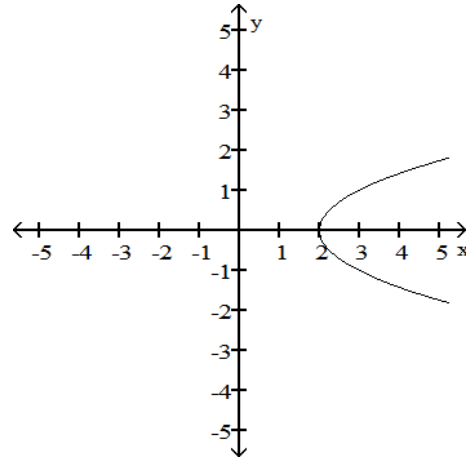




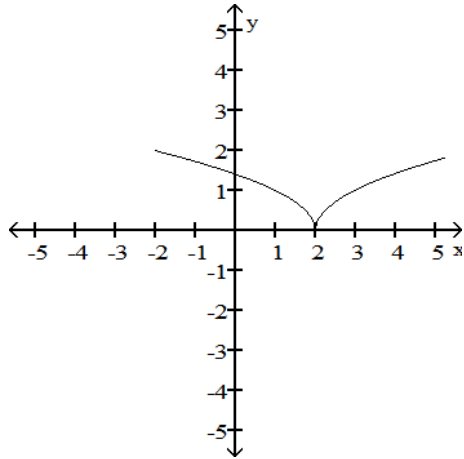
A)



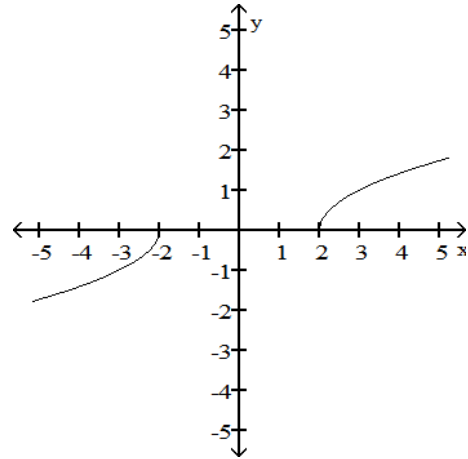
B)



C)



D)



List the intercepts and type(s) of symmetry, if any.

24)  $y^2 = -x + 9$

- A) intercepts: (0, -9), (3, 0), (-3, 0)  
symmetric with respect to y-axis
- C) intercepts: (-9, 0), (0, 3), (0, -3)  
symmetric with respect to x-axis

- B) intercepts: (0, 9), (3, 0), (-3, 0)  
symmetric with respect to y-axis
- D) intercepts: (9, 0), (0, 3), (0, -3)  
symmetric with respect to x-axis

24) \_\_\_\_\_

25)  $4x^2 + y^2 = 4$

- A) intercepts: (1, 0), (-1, 0), (0, 2), (0, -2)  
symmetric with respect to x-axis and y-axis
- B) intercepts: (1, 0), (-1, 0), (0, 2), (0, -2)  
symmetric with respect to x-axis, y-axis, and origin
- C) intercepts: (2, 0), (-2, 0), (0, 1), (0, -1)  
symmetric with respect to x-axis and y-axis
- D) intercepts: (2, 0), (-2, 0), (0, 1), (0, -1)  
symmetric with respect to the origin

25) \_\_\_\_\_

$$26) y = \frac{-x^3}{x^2 - 8}$$

26) \_\_\_\_\_

A) intercepts:  $(2\sqrt{2}, 0)$ ,  $(-2\sqrt{2}, 0)$ ,  $(0, 0)$   
symmetric with respect to origin

B) intercept:  $(0, 0)$   
symmetric with respect to origin

C) intercept:  $(0, 0)$   
symmetric with respect to x-axis

D) intercept:  $(0, 0)$   
symmetric with respect to y-axis

Determine whether the graph of the equation is symmetric with respect to the x-axis, the y-axis, and/or the origin.

$$27) y = x - 4$$

27) \_\_\_\_\_

- A) x-axis
- B) origin
- C) y-axis
- D) x-axis, y-axis, origin
- E) none

$$28) y = -3x$$

28) \_\_\_\_\_

- A) x-axis
- B) origin
- C) y-axis
- D) x-axis, y-axis, origin
- E) none

$$29) x^2 + y - 25 = 0$$

29) \_\_\_\_\_

- A) x-axis
- B) y-axis
- C) origin
- D) x-axis, y-axis, origin
- E) none

$$30) y^2 - x - 4 = 0$$

30) \_\_\_\_\_

- A) x-axis
- B) origin
- C) y-axis
- D) x-axis, y-axis, origin
- E) none

$$31) 9x^2 + 16y^2 = 144$$

31) \_\_\_\_\_

- A) y-axis
- B) origin
- C) x-axis
- D) x-axis, y-axis, origin
- E) none

$$32) 16x^2 + y^2 = 16$$

32) \_\_\_\_\_

- A) origin
- B) y-axis
- C) x-axis
- D) x-axis, y-axis, origin
- E) none

- 33)  $y = x^2 + 5x + 6$  33) \_\_\_\_\_  
A) y-axis  
B) x-axis  
C) origin  
D) x-axis, y-axis, origin  
E) none
- 34)  $y = \frac{9x}{x^2 + 81}$  34) \_\_\_\_\_  
A) x-axis  
B) y-axis  
C) origin  
D) x-axis, y-axis, origin  
E) none
- 35)  $y = \frac{x^2 - 16}{4x^4}$  35) \_\_\_\_\_  
A) origin  
B) y-axis  
C) x-axis  
D) x-axis, y-axis, origin  
E) none
- 36)  $y = 4x^2 + 5$  36) \_\_\_\_\_  
A) origin  
B) x-axis  
C) y-axis  
D) x-axis, y-axis, origin  
E) none
- 37)  $y = (x - 4)(x - 7)$  37) \_\_\_\_\_  
A) x-axis  
B) origin  
C) y-axis  
D) x-axis, y-axis, origin  
E) none
- 38)  $y = -6x^3 + 5x$  38) \_\_\_\_\_  
A) origin  
B) y-axis  
C) x-axis  
D) x-axis, y-axis, origin  
E) none