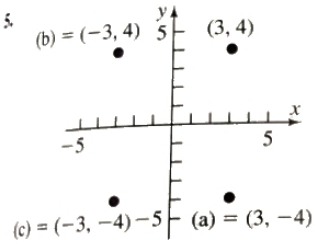
2.2 Concepts and Vocabulary *(page 174)*

1. intercepts **2.** zeros; roots **3.** True **4.** $(3, -4)$

2.2 Exercises *(page 174)*

5.



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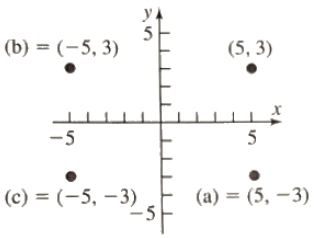

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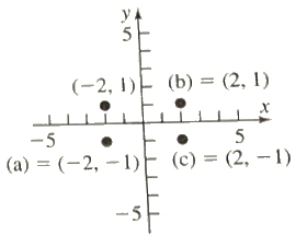

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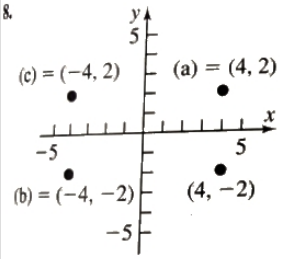

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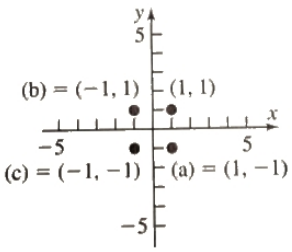

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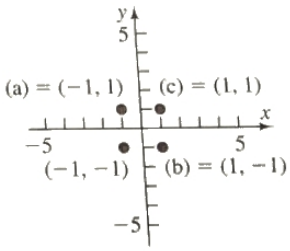

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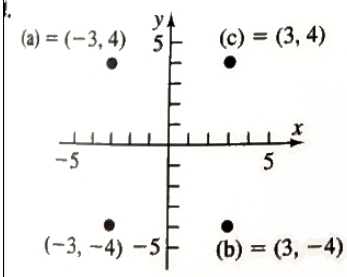

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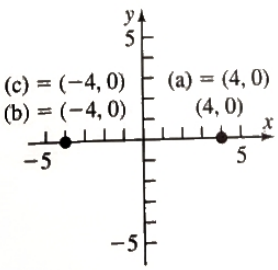
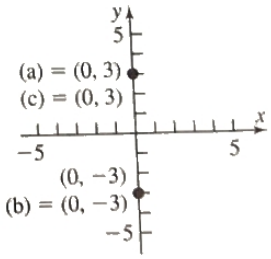


13.



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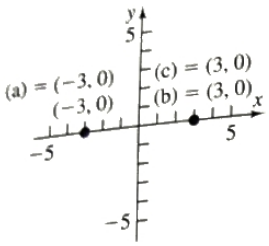


15. **(a)** $(-1,0), (1,0)$ **(b)** x-axis, y-axis, origin **16.** **(a)** $(0,1)$ **(b)** none

17. **(a)** $\left(-\frac{\pi}{2}, 0\right), (0,1), \left(\frac{\pi}{2}, 0\right)$ **(b)** y-axis **18.** **(a)** $(-2,0), (0,-3), (2,0)$ **(b)** y-axis

19. **(a)** $(0,0)$ **(b)** x-axis **20.** **(a)** $(-2,0), (2,0), (0,-2), (0,2)$ **(b)** x-axis, y-axis, origin

21. **(a)** $(1,0)$ **(b)** none **22.** **(a)** $(0,0)$ **(b)** none **23.** **(a)** $(-1,0), (0,-1), (1,0)$ **(b)** y-axis

24. **(a)** $(0,0)$ **(b)** origin **25.** **(a)** none **(b)** origin **26.** **(a)** none **(b)** x-axis

27. $(0,0)$ is on the graph. **28.** $(0,0)$ and $(1,-1)$ are on the graph. **29.** $(0,3)$ is on the graph.

30. $(0,1)$ and $(-1,0)$ are on the graph. **31.** $(0,2)$ and $(\sqrt{2}, \sqrt{2})$ are on the graph.

32. $(0,1)$ and $(2,0)$ are on the graph. **33.** $(0,0)$; symmetric with respect to the y-axis **34.** $(0,0)$; symmetric with respect to the x-axis

35. $(0,0)$; symmetric with respect to the origin **36.** $(0,0)$; symmetric with respect to the origin

37. $(0,9), (3,0), (-3,0)$; symmetric with respect to the y-axis **38.** $(-4,0), (0,-2), (0,2)$; symmetric with respect to the x-axis

39. $(-2,0), (2,0), (0,-3), (0,3)$; symmetric with respect to the x-axis, y-axis, and origin

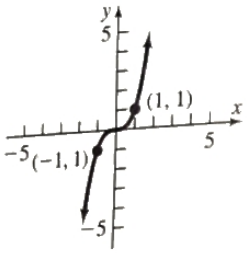
40. $(-1,0), (1,0), (0,-2), (0,2)$; symmetric with respect to the x-axis, y-axis, and origin **41.** $(0,-27), (3,0)$; no symmetry

42. $(-1,0), (1,0), (0,-1)$; symmetric with respect to the y-axis **43.** $(0,-4), (4,0), (-1,0)$; no symmetry

44. $(0,4)$; symmetric with respect to the y-axis **45.** $(0,0)$; symmetric with respect to the origin

46. $(-2,0), (2,0)$; symmetric with respect to the y-axis **47.** $(0,0)$; symmetric with respect to the y-axis **48.** $(0,0)$; no symmetry

49.



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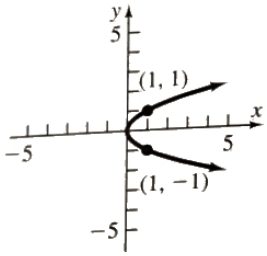

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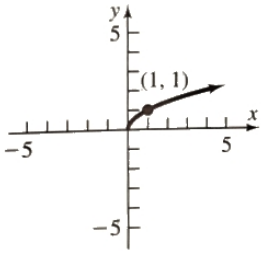
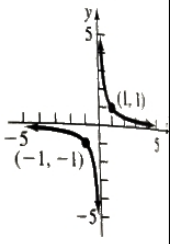
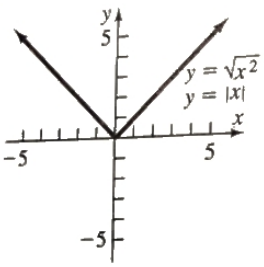


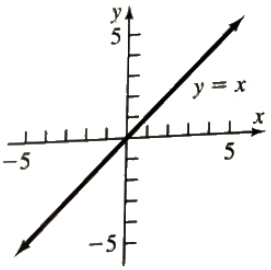
52.

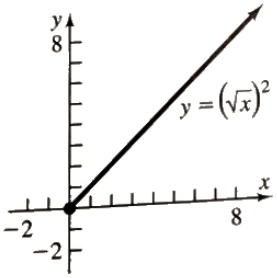


53. $a = -1$ **54.** $b = 12$ **55.** $2a + 3b = 6$ **56.** $m = -\frac{5}{2}, b = 5$

57. **(a)**







(b) Since $\sqrt{x^2} = |x|$, for all x, the graphs of $y = \sqrt{x^2}$ and $y = |x|$ are the same.

(c) For $y = (\sqrt{x})^2$, the domain of the variable x is $x \geq 0$; for $y = x$, the domain of the variable x is all real numbers.
Thus, $(\sqrt{x})^2 = x$ only for $x \geq 0$.

(d) For $y = \sqrt{x^2}$, the range of the variable y is $y \geq 0$; for $y = x$, the range of the variable y is all real numbers.
Also, $\sqrt{x^2} = |x|$, which equals x only if $x \geq 0$.