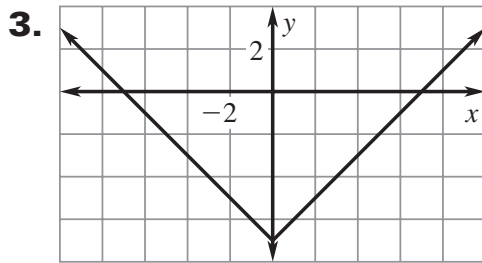# Answers for 2.7
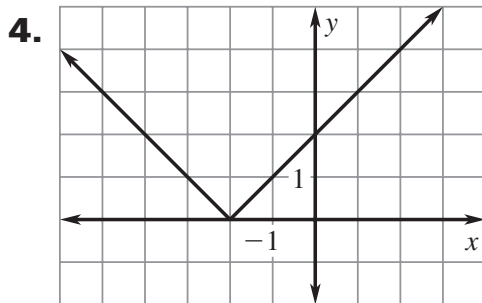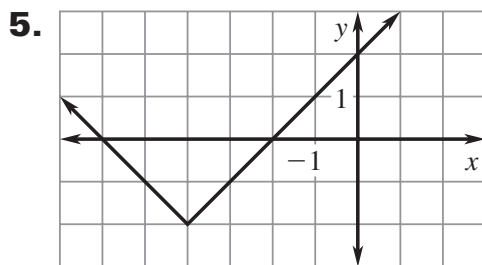
2.7 Skill Practice

1. vertex

2. *Sample answer:* Graphs can be stretched vertically, translated left/right, and translated up/down.
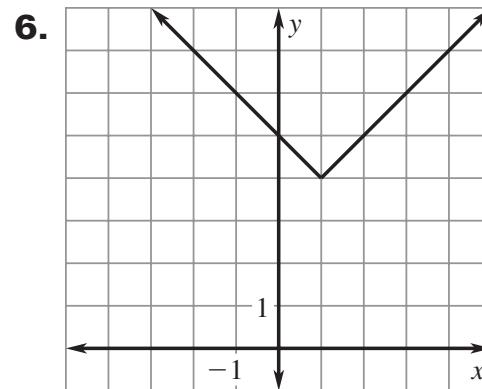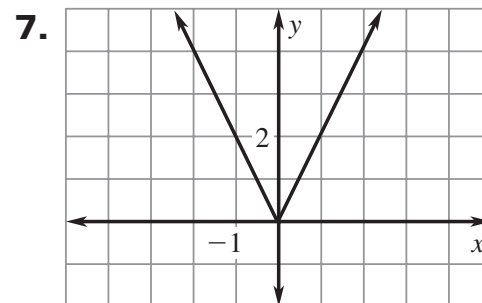
3.

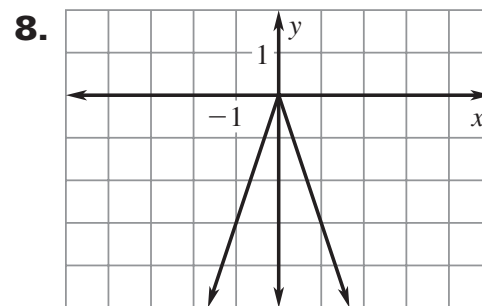translated down 7 units

4.

translated left 2 units

5.

translated left 4 units and down 2 units
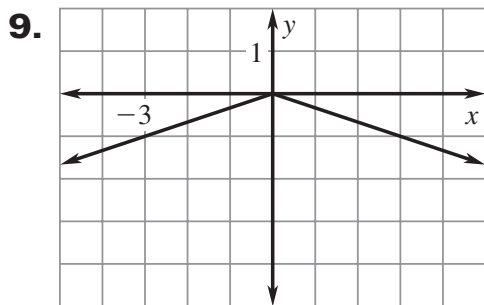
6.

translated right 1 unit and up 4 units

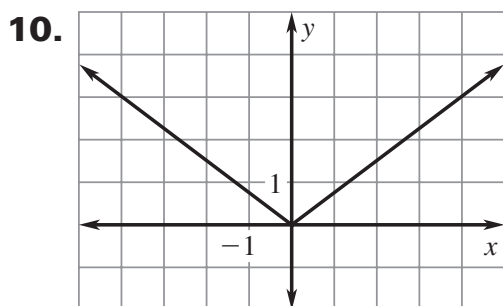**7.**

stretched vertically by a factor of 2

8.

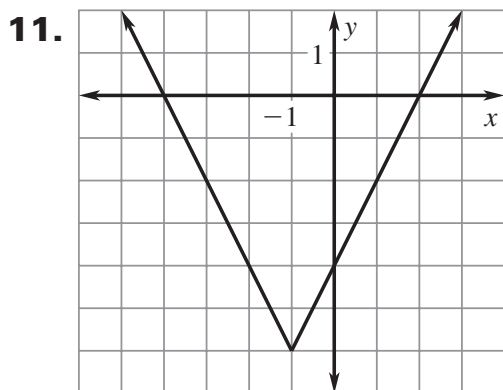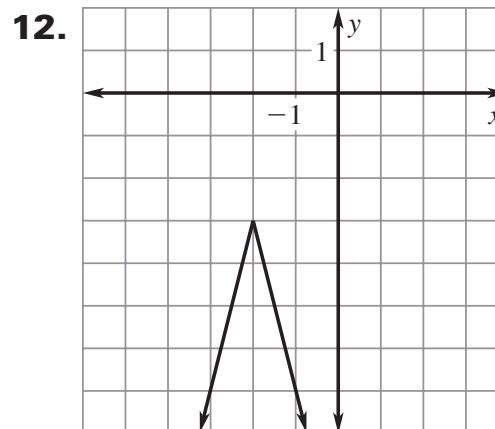reflected over the *x*-axis and stretched vertically by a factor of 3

9.

reflected over the *x*-axis
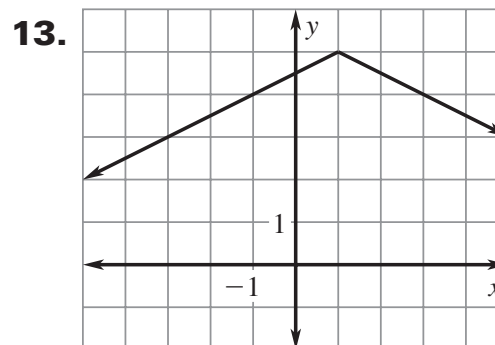and shrunk vertically by a
factor of $\frac{1}{3}$

10.

shrunk vertically by a factor of $\frac{3}{4}$

11.

stretched vertically by a factor of
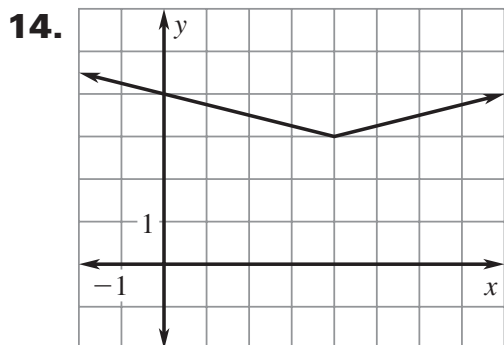2, translated left 1 unit and down
6 units

12.

reflected over the *x*-axis, stretched
vertically by a factor of 4,
translated left 2 units and
down 3 units

13.

reflected over the *x*-axis, shrunk
vertically by a factor of $\frac{1}{2}$,
translated right 1 unit and
up 5 units

14.

shrunk vertically by a factor of $\frac{1}{4}$, translated right 4 units and up 3 units

15. $y = -3|x|$

16. $y = |x - 4| + 3$
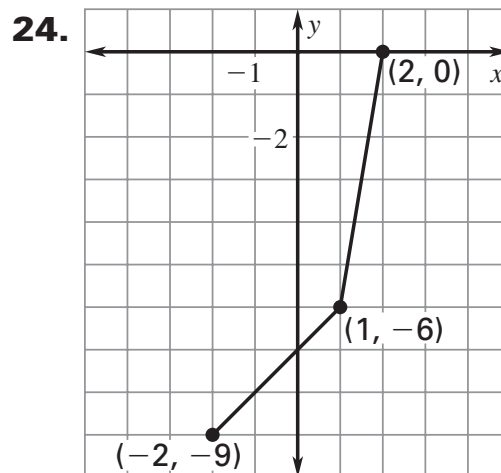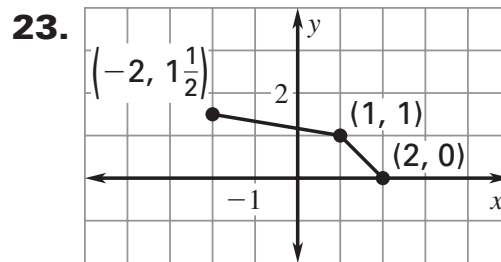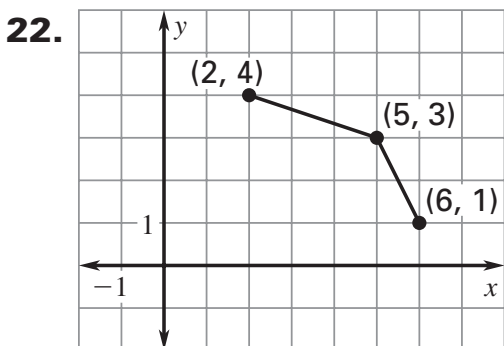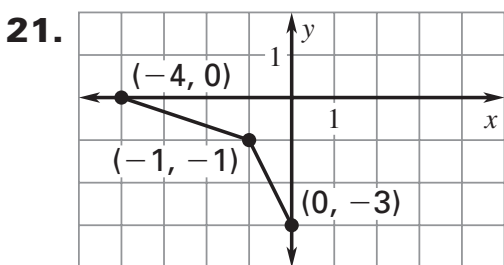
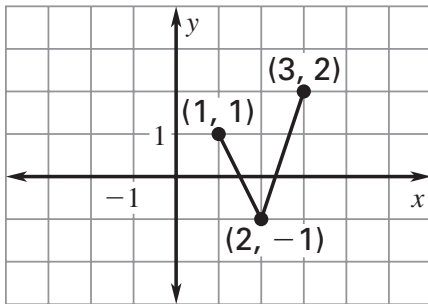**17.** $y = \frac{1}{3}|x|$

18. $y = -|x| + 2$

19. $y = \frac{1}{2}|x + 2| - 1$

20. $y = 2|x - 5| + 2$

21.

22.

23.

24.

25.

26.
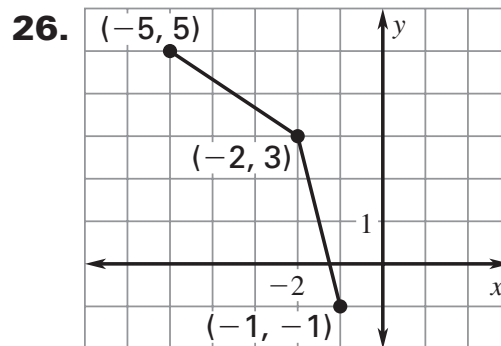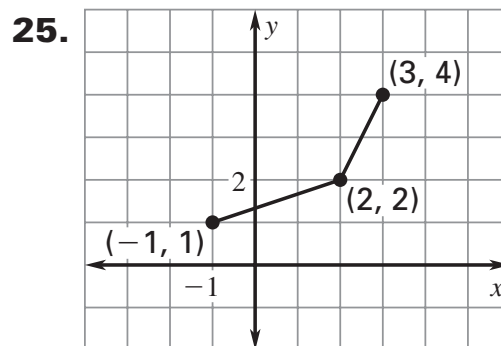
Answers for 2.7 *continued*
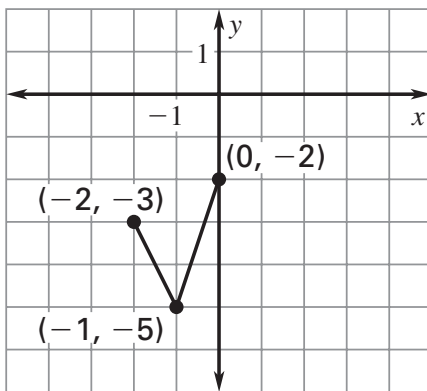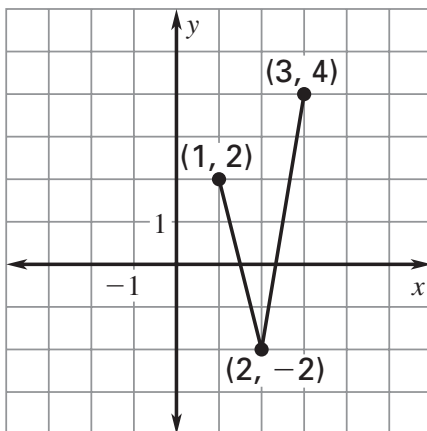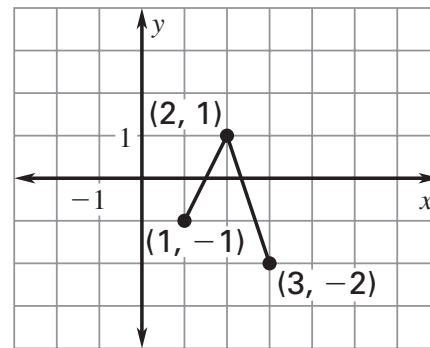
27. *Sample:*
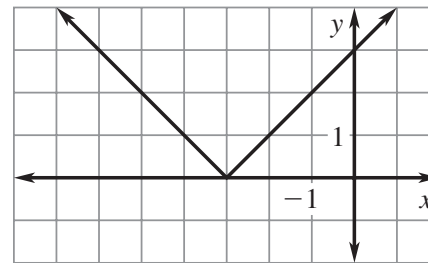

a. *Sample:*

b. *Sample:*

c. *Sample:*

28. D

29. The graph should have been a translation of $y = |x|$ left 3 units, not right 3 units.

30. The graph should have been a translation of $y = |x|$ left 3 units, not up 3 units. See art for Exercise 29.

31. D

32. *Sample answer:* The horizontal shift is the opposite sign of h, with negative being translated right and positive being translated left. The vertical shift is the same as k, with positive being translated up and negative being translated down.
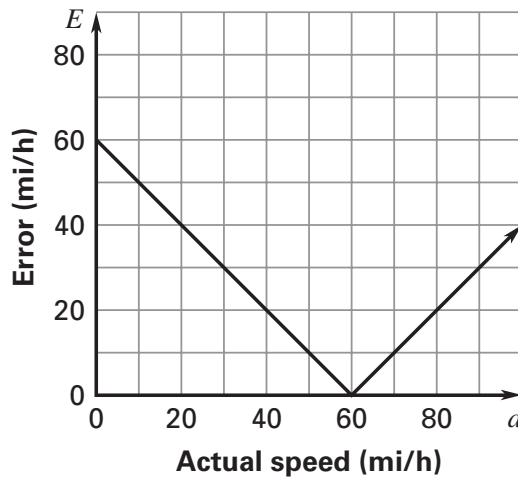
33. No. *Sample answer:* It does not pass the vertical line test.

34. No. *Sample answer:* The graph of $y = |x + h|$ is the graph of $y = |x|$ translated $-h$ units horizontally. The graph of $y = |x| + |h|$ is the graph of $y = |x|$ translated $+h$ units vertically.
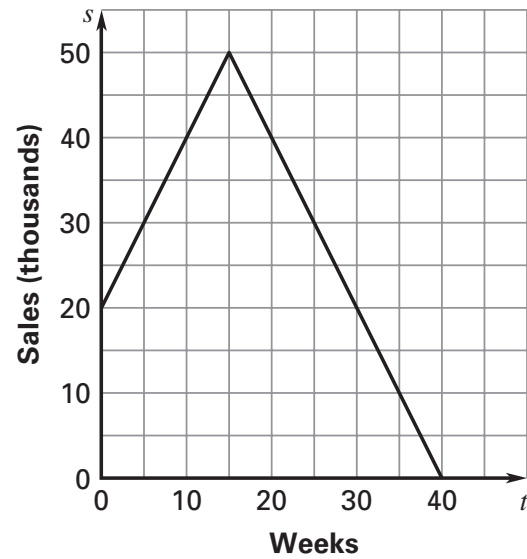
35. $h = 1$ and $k =$ any real number

2.7 Problem Solving

36.

Actual speed (mi/h)
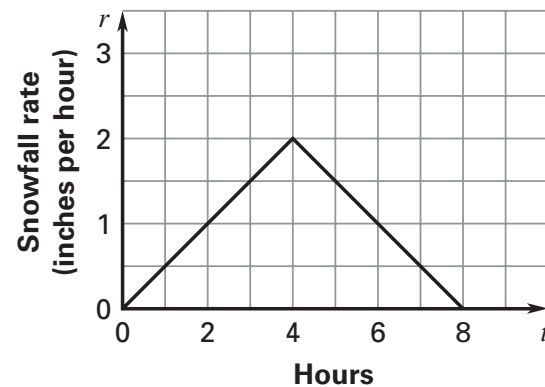
57.5 mi/h, 62.5 mi/h

37.

Weeks

50,000 pairs of shoes

38. a. $y = -\frac{4}{3}|x + 1.25| + 5$

b. Yes. *Sample answer:* $(-5, 0)$ satisfies the equation in part (a).

39. $y = -\frac{140}{69}|x - 69| + 140$

40. a.

Hours

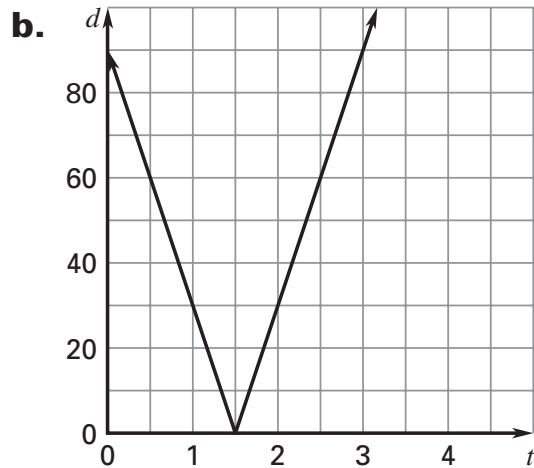**b.** 4 h; 2 in./h; it is the vertex of the graph.

c. 8 in.

41. a.

t	0	0.5	1	1.5	2	2.5	3
d	90	60	30	0	30	60	90

b.

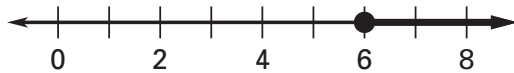**c.** $d = \left|90 - 60t\right|; \frac{2}{3} \le t \le \frac{7}{3}$

42. 1000 ft

2.7 Mixed Review

43. $x \ge 6$
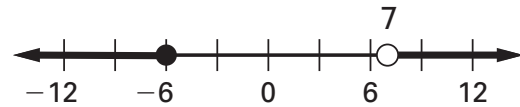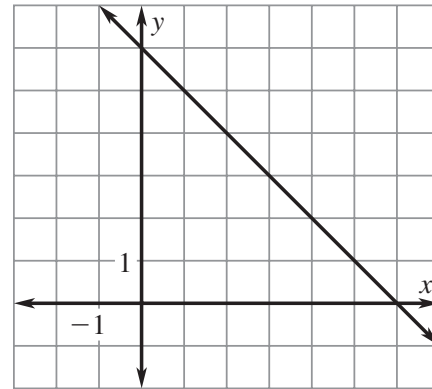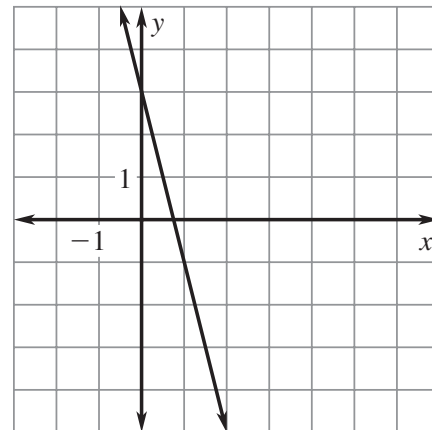

44. $x < 7$

45. $x > -3.5$

46. $x \le -8$

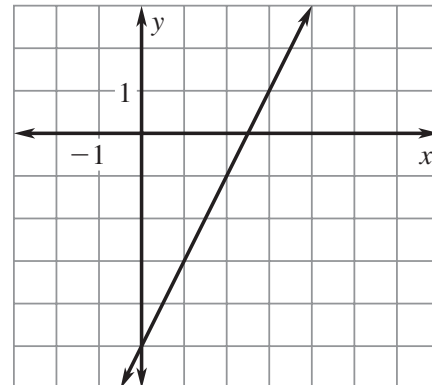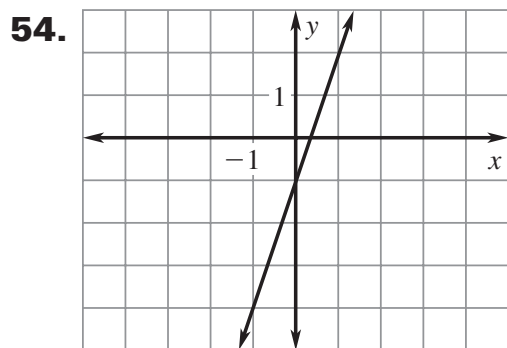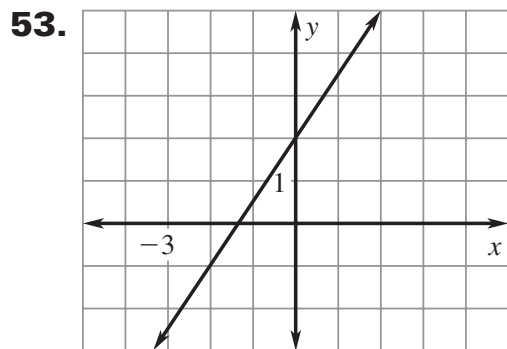

47. $8 \le x \le 15$

48. $x \le -6$ or $x > 7$

49.

50.

51.

52.

53.

54.

55. $d = \dfrac{21}{475}r$