3.3 EXERCISES

PRACTICE

Graph the following linear functions. See Example 1.

1. $f(x) = -5x + 2$

2. $g(x) = \dfrac{3x-2}{4}$

3. $h(x) = -x + 2$

4. $p(x) = -2$

5. $g(x) = 3 - 2x$

6. $r(x) = 2 - \dfrac{x}{5}$

7. $f(x) = -2(1-x)$

8. $a(x) = 3\left(1 - \dfrac{1}{3}x\right) + x$

9. $f(x) = 2 - 4x$

10. $g(x) = \dfrac{2x-8}{4}$

11. $h(x) = 5x - 10$

12. $k(x) = 3x - \dfrac{2+6x}{2}$

13. $m(x) = \dfrac{-x+25}{10}$

14. $q(x) = 1.5x - 1$

15. $w(x) = (x-2) - (2+x)$

Match the following functions with their graphs.

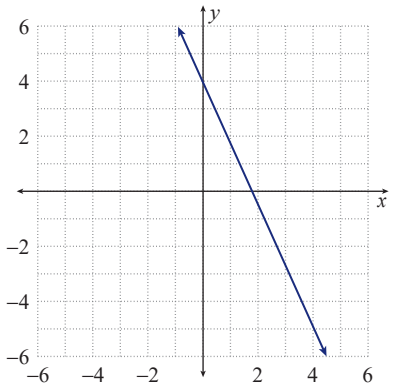
16. $f(x) = (8x-14) - (-17+2x)$

17. $f(x) = 3x - \dfrac{7+8x}{3}$

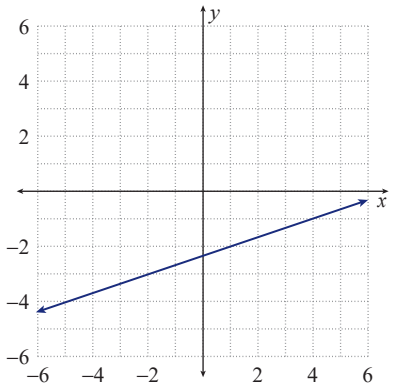
18. $f(x) = \dfrac{6}{2} - \dfrac{2}{8}x$

19. $f(x) = 2\left(2 - \dfrac{8}{5}x\right) + x$

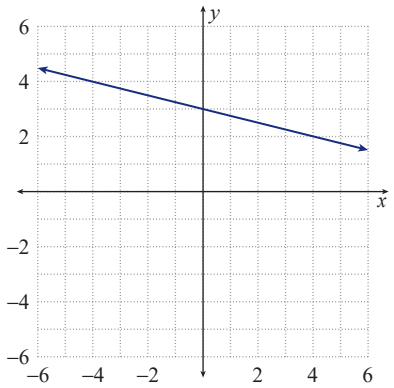
a.



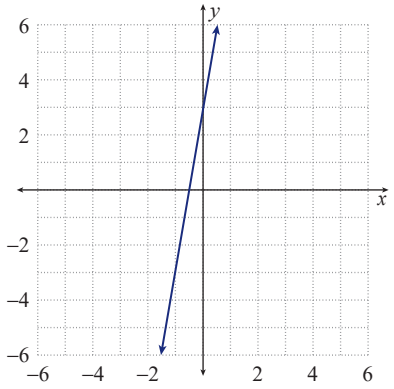
b.



c.



d.



Graph the following quadratic functions, accurately locating the vertices and *x*-intercepts (if any). See Example 2.

20. $f(x)=(x-2)^2+3$

21. $g(x)=-(x+2)^2-1$

22. $h(x)=x^2+6x+7$

23. $F(x)=3x^2+2$

24. $G(x)=x^2-x-6$

25. $p(x)=-2x^2+2x+12$

26. $q(x)=2x^2+4x+3$

27. $r(x)=-3x^2-1$

28. $s(x)=\dfrac{(x-1)^2}{4}$

29. $m(x)=x^2+2x+4$

30. $n(x)=(x+2)(2-x)$

31. $p(x)=-x^2+2x-5$

32. $f(x)=4x^2-6$

33. $k(x)=2x^2-4x$

34. $q(x)=(x+10)(x-2)+36$

Match the following functions with their graphs.

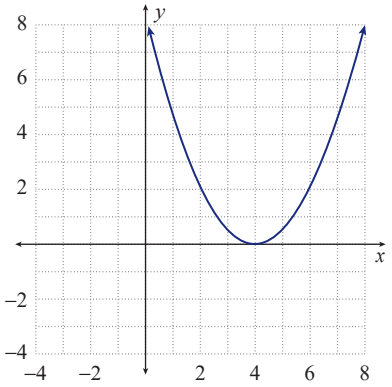
35. $f(x)=-x^2+2x$

36. $f(x)=x^2+7x+6$

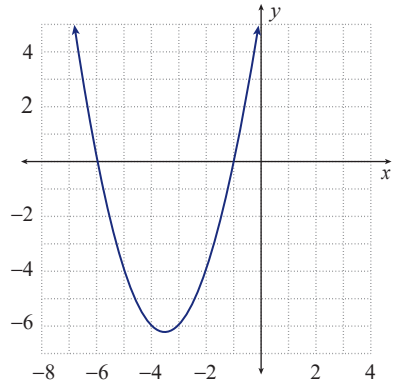
37. $f(x)=\dfrac{x^2-8x+16}{2}$

38. $f(x)=(x-5)(x+3)+16$

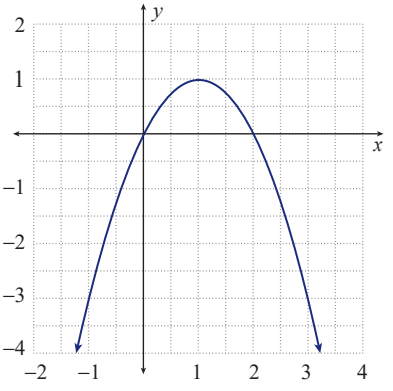
a.



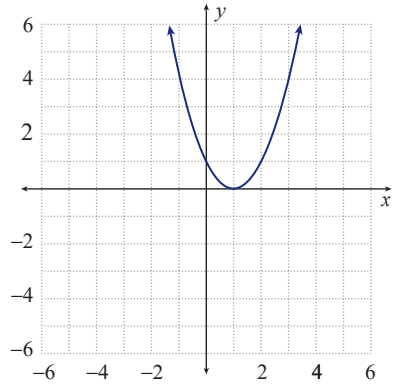
b.



c.



d.



WRITING & THINKING

39. Without graphing, state the number of x-intercepts for each of the following functions and describe the location of the vertex in relation to the x-axis.

a. $y=(x-2)^2$

b. $y=(x-2)(x+2)$

c. $y=-(x-3)(x-1)$

d. $y=-\left(x-\sqrt{3}\right)\left(x+\sqrt{3}\right)$

e. $y=x(x+1)$

f. $y=-\left(x^2+1\right)$