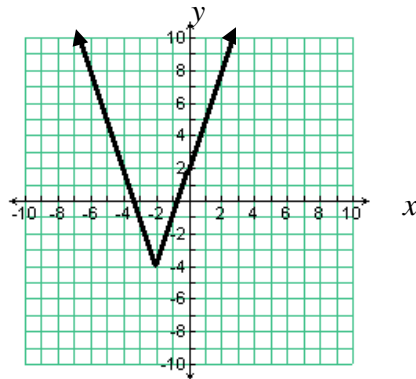


1.  $-5$
2.  $98$
3.  $3x - 11$
4.  $-x + 5$
5.  $(x - 3)(2x - 8) = 2x^2 - 14x + 24$
6.  $\frac{x - 3}{2x - 8}$
7.  $2(x^2 - 2) - 8 = 2x^2 - 12$
8.  $(x - 3)^2 - 2 = x^2 - 6x + 7$
9. 1 to 1
10. not 1 to 1
11. not 1 to 1
12. not 1 to 1
13. A
14. a.



- |                                  |   |
|----------------------------------|---|
| b. all real numbers              | e. The line $x = -2$  |
| c. $y \geq -4$ or $g(x) \geq -4$ | f. $-4$   |
| d. $(-2, -4)$                    | g. Stretched vertically by a factor of three, translated 2 units left and 4 units down. |
|                                  | h. yes  |

15. a.  $f(x) = \begin{cases} 12+5x, & \text{if } x < 50 \\ 12+3x, & \text{if } x \geq 50 \end{cases}$

b. \$ 187

16.  $f(x) = \begin{cases} -x+3, & \text{if } x < 0 \\ x+1, & \text{if } x \geq 0 \end{cases}$

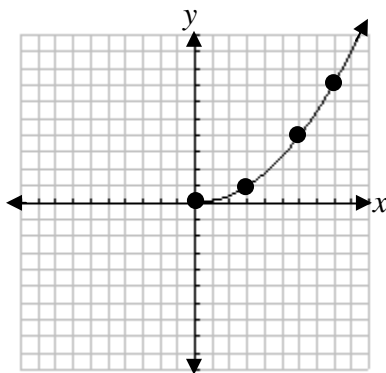
17. a. Stretch vertically by a factor of four and translate up 1 unit.  
 b. Shrink vertically by a factor of  $1/2$ , translate 5 units to the left and 9 units up.  
 c. Translate three units left and 4 units up.

18.  $f(g(x)) = 7\left(\frac{x+6}{7}\right) - 6 = x + 6 - 6 = x$   
 $g(f(x)) = \frac{(7x-6)+6}{7} = \frac{7x}{7} = x$

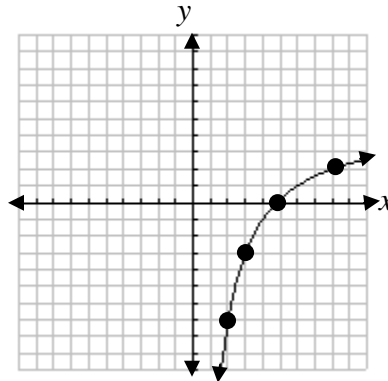
19. **D**

20.  $g^{-1}(x) = \frac{x+10}{9}$

21. a.



b.



22. **A**

23. -2

24.  $60 - 10x$

25. 6

26. 14

27. 
$$\begin{bmatrix} 1.5 & -1 \\ 2.5 & -2 \end{bmatrix}$$

28.  $x < 0$  or  $x \leq 0$

29. As  $x \rightarrow \infty$ ,  $f(x) \rightarrow \infty$       As  $x \rightarrow -\infty$ ,  $f(x) \rightarrow -\infty$

30. As  $x \rightarrow \infty$ ,  $f(x) \rightarrow -\infty$       As  $x \rightarrow -\infty$ ,  $f(x) \rightarrow -\infty$

31. a.     **D**

b.     **B**

32. a.     4

b.     2

33. degree 3;       $y = x^3 + x^2 - x + 4$

34. degree 2;       $y = x^2 + 2x + 3$

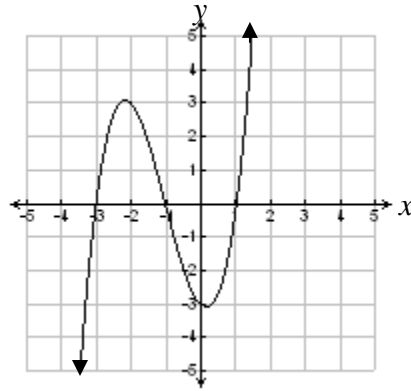
35.  $x = \frac{3 \pm i\sqrt{35}}{2}$

36.  $x = \frac{-5 \pm i\sqrt{11}}{6}$

37. a.       $y = (x+2)(x-3)(x-6)$

b.       $y = -x(x+5)(x-4)$

38. a. zeros are  $-3, -1, 1$



- b.  $f(x) \rightarrow \infty$   
 c.  $f(x) \rightarrow -\infty$
39. a. yes  
 b. yes  
 c. yes  
 d. no  
 e. no
40.  $\pm 1, 2, 4, \frac{1}{5}, \frac{2}{5}, \frac{4}{5}$
41. a. yes  
 b. no  
 c. no  
 d. no  
 e. yes  
 f. yes
42. a. 9  
 b. 25
43.  $A: -5 \quad B: 4i \quad C: 5+2i \quad D: 4-3i \quad E: -2-i$
44. a. real and complex  
 b. pure imaginary  
 c. complex
45.  $8-5i$
46.  $-1-11i$
47. 68

48.  $-45 - 28i$

49.  $-\frac{7i}{2}$

50.  $7 - 2i$

51.  $(x+6)(x+1)(x-8)$

52.  $(x+4)(x-3)(x-7)$

53. Let  $x$  = the cost of one hamburger  
Let  $y$  = the cost of one cheeseburger  
Let  $z$  = the cost of one Barry Burger

a.

$$3x + 5y + 6z = 25.24$$

$$2x + 7y + 5z = 25.68$$

$$4x + 4y + 7z = 26.59$$

b.

$$\begin{bmatrix} 3 & 5 & 6 \\ 2 & 7 & 5 \\ 4 & 4 & 7 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 25.24 \\ 25.68 \\ 26.59 \end{bmatrix}$$

- c. One hamburger costs \$0.85, one cheeseburger costs \$1.79, and one Barry Burger Costs \$2.29.

54. a.  $(x-5)(x^2 + 5x + 25)$

b.  $(x+4)(x^2 - 4x + 16)$

55. a.  $x = 3, \frac{-3 \pm i\sqrt{27}}{2}$

b.  $x = -10, \frac{10 \pm i\sqrt{300}}{2}$

56.  $(-\infty, -1] \cup [6, \infty)$  or  $x \leq -1, x \geq 6$

