

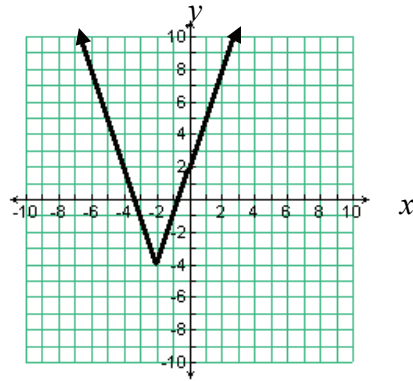
1. A

$$2. f(x) = \begin{cases} -x+3, & \text{if } x < 0 \\ x+1, & \text{if } x \geq 0 \end{cases}$$

$$3. a. f(x) = \begin{cases} 12+5x, & \text{if } 0 < x < 50 \\ 12+3x, & \text{if } x \geq 50 \end{cases}$$

b. \$ 187

4. a.



b. all real numbers

c. $y \geq -4$ or $g(x) \geq -4$ d. $(-2, -4)$ e. The line $x = -2$ f. -4

g. Stretched vertically by a factor of three, translated 2 units left and 4 units down

h. yes

5. -5

6. 98

7. $3x-11$ 8. $-x+5$

9. $(x-3)(2x-8) = 2x^2 - 14x + 24$

10. $\frac{x-3}{2x-8}$

11. $2(x^2 - 2) - 8 = 2x^2 - 12$

12. $(x-3)^2 - 2 = x^2 - 6x + 7$

13. 1 to 1

14. not 1 to 1

15. not 1 to 1

16. not 1 to 1

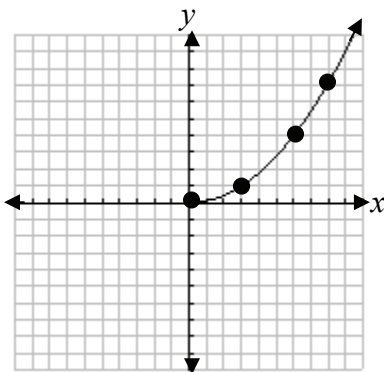
$$17. f(g(x)) = 7\left(\frac{x+6}{7}\right) - 6 = x + 6 - 6 = x$$

$$g(f(x)) = \frac{(7x-6)+6}{7} = \frac{7x}{7} = x$$

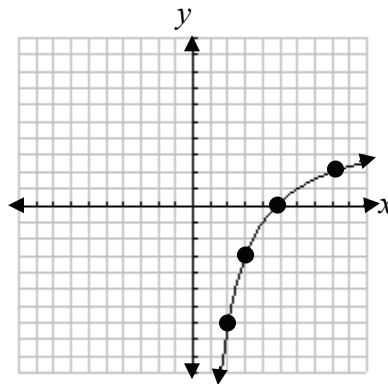
18. **D**

$$19. g^{-1}(x) = \frac{x+10}{9}$$

20.



21.



22. Stretch vertically by a factor of four and translate up one unit.

23. Shrink vertically and translate five units to the left and nine units up.

24. Translate three units left and four units up.

25. -2

26. $60 - 10x$ 27. **A**

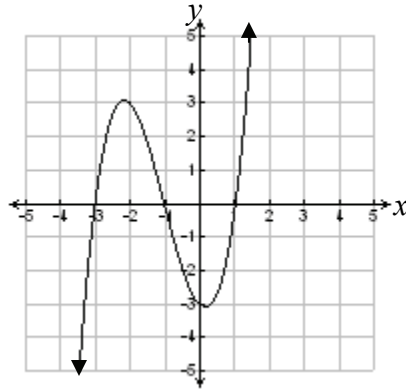
28. -6

29. 6

$$30. \begin{bmatrix} 1.5 & -1 \\ 2.5 & -2 \end{bmatrix}$$

31. Let x = the cost of one hamburger
Let y = the cost of one cheeseburger
Let z = the cost of one BarryBurger
- 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.
32. 30.8 meters
33. $A: -5$ $B: 4i$ $C: 5 + 2i$ $D: 4 - 3i$ $E: -2 - i$
34. a. real and complex
b. pure imaginary and complex
c. complex
35. $8 - 5i$
36. $-1 - 11i$
37. 68
38. $-45 - 28i$
39. $-\frac{7i}{2}$
40. $\frac{7 - 2i}{3}$
41. 9
42. 25
43. $x = \frac{3 \pm i\sqrt{35}}{2}$
44. $x = \frac{-5 \pm i\sqrt{11}}{6}$

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



- b. $f(x) \rightarrow \infty$
 c. $f(x) \rightarrow -\infty$
57. a. yes
 b. yes
 c. yes
 d. no
 e. no
58. $\pm 1, \pm 2, \pm 4, \pm \frac{1}{5}, \pm \frac{2}{5}, \pm \frac{4}{5}$
59. a. 4
 b. 2
60. a. **D**
 b. **B**
61. $(-\infty, -1] \cup [6, \infty)$ or $x \leq -1, x \geq 6$
62. $(x+6)(x+1)(x-8)$
63. $(x+4)(x-3)(x-7)$

64. Note: Answers are rounded to 3 decimal places

Function	Value of any local maximums	Value of any local minimums	Interval(s) where the function is increasing	Interval(s) where the function is decreasing
$f(x) = \frac{x^3}{3} + 2x^2 + x + 3$	9.797	2.869	$x < -3.732$ $x > -.268$	$-3.732 < x < -.268$
$g(x) = x^4 - 5x^2 + 4$	4	-2.25	$-1.581 < x < 0$ $x > 1.581$	$x < -1.581$ $0 < x < 1.581$

65. a. $f(t) = -16t^2 + 50t + 400$

b. 344 feet

c. 6.801 sec.

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

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