

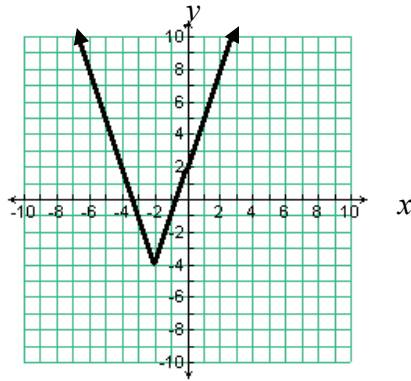
1. A

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

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

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

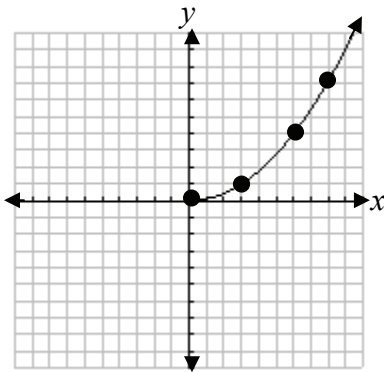
17. $f(g(x)) = 7\left(\frac{x+6}{7}\right) - 6 = x + 6 - 6 = x$

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

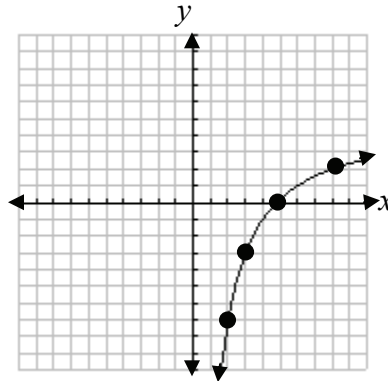
18. **D**

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

20.



21.



22. Stretch vertically by a factor of four and translate up 1 unit.

23. Shrink vertically and translate 5 units to the left and 9 units up.

24. Translate three units left and 4 units up.

25. -2

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

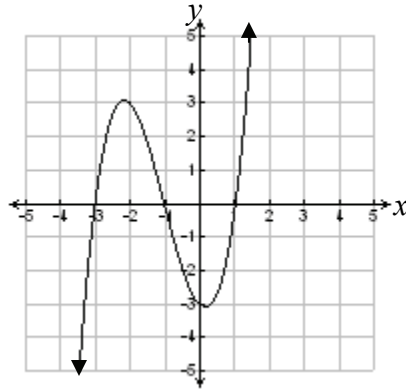
28. -6

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. 36.8 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; $y = x^2 + 2x + 3$