

Answer Key 6

2.3: 7, 9, 32, 45, 57, 59

2.4: 3, 10, 15, 21, 26, 29, 31

2.6: 9, 16, 24, 33, 37, 47, 48, 58, 61, 67, 70, 71, 73, 91

2.3

<p>7)</p> <p>a) $h(-2) = 1, h(0) = -1, h(2) = 3, h(3) = 4$</p> <p>b) domain = $[-3, 4]$ range = $[-1, 4]$</p> <p>c) $h(-3) = 3, h(2) = 3, h(4) = 3$</p> <p>d) $\{x \mid -3 \leq x \leq 2 \text{ or } x = 4\}$</p> <p>e) $f(3) - f(-3) = 4 - 3 = 1$</p>	<p>9)</p> <p>a) $f(0) = 3 > g(0) = .5$</p> <p>b) $f(-3) = -1 < g(-3) = 2$</p> <p>c) $f(-2) = g(-2) = 1, f(2) = g(2) = 2$</p> <p>d) $\{x \mid -3 \leq x < -2 \text{ or } 2 < x \leq 3\}$</p> <p>e) $\{x \mid -2 \leq x \leq 2\}$</p>						
<p>32)</p> <p>a) Domain = $[-2, 3]$, Range = $[-2, 3]$</p> <p>b) Increasing on $[0, 1]$, decreasing on $[-2, 0]$ and $[1, 3]$</p>	<p>45)</p> <table border="1" data-bbox="824 762 1385 909"> <thead> <tr> <th>local minimums</th> <th>local maximums</th> </tr> </thead> <tbody> <tr> <td>$f(-2) = -2$</td> <td>$f(0) = 0$</td> </tr> <tr> <td>$f(1) = -1$</td> <td>$f(3) = 1$</td> </tr> </tbody> </table> <p>b)</p> <p>Increasing on $[-2, 0], [1, 2]$</p> <p>decreasing on $(-\infty, -2], [0, 1], [3, \infty)$</p>	local minimums	local maximums	$f(-2) = -2$	$f(0) = 0$	$f(1) = -1$	$f(3) = 1$
local minimums	local maximums						
$f(-2) = -2$	$f(0) = 0$						
$f(1) = -1$	$f(3) = 1$						
<p>57)</p> <p>a)</p> <p>increasing $[0, 30]$ and $[33, 69]$</p> <p>decreasing $[30, 33]$</p> <p>b)</p> <p>Went on a diet.</p> <p>Hiked the world for a few years.</p> <p>Had cancer and survived.</p> <p>c) $f(20) - f(10) = 150 - 50 = 100$</p>	<p>59)</p> <p>a)</p> <p>increasing $[0, 150]$ $[300, 400]$</p> <p>decreasing $[150, 300]$</p> <p>b)</p> <p>local maximum at $x=150$</p> <p>local minimum at $x=300$</p> <p>c) $f(300) - f(100) = 25 - 75 = -50$</p>						

<p>3)</p> $\frac{f(5) - f(1)}{5 - 1} = \frac{25 - 1}{4} = \frac{24}{4} = 6$	<p>10)</p> <p>a) Net $f(5) - f(-1) = 4 - 0 = 4$</p> <p>b) Avg $\frac{f(5) - f(-1)}{5 - (-1)} = \frac{4 - 0}{6} = \frac{2}{3}$</p>
<p>15)</p> <p>a) Net $f(6) - f(3) = 66 - 15 = 51$</p> <p>b) Avg $\frac{f(6) - f(3)}{6 - 3} = \frac{66 - 15}{3} = \frac{51}{3} = 17$</p>	<p>21)</p> <p>a) Net $f(a) - f(1) = \frac{1}{a} - 1 = \frac{1 - a}{a}$</p> <p>b) Avg $\frac{f(a) - f(1)}{a - 1} = \frac{\frac{1}{a} - 1}{a - 1} = \frac{1 - a}{a(a - 1)} = -1$</p>
<p>26)</p> <p>a) $\frac{g(a+h) - g(a)}{(a+h) - a} = \frac{-4(a+h) - (-4a)}{h} =$</p> $\frac{-4h}{h} = -4$ <p>b)</p> <p>Slope of $-4x+2$ is -4</p>	<p>29)</p> $\frac{f(200) - f(100)}{200 - 100} = \frac{50 - 75}{100} = \frac{-25}{100} = -.25$
<p>31)</p> <p>a)</p> $\frac{f(2001) - f(1998)}{2001 - 1998} = \frac{1591 - 856}{3} =$ $\frac{735}{3} = 245$ <p>b)</p> $\frac{f(2004) - f(2002)}{2004 - 2002} = \frac{826 - 1483}{2} =$ $\frac{-657}{2} = -328.5$	

9)

a) $f(-x)$ - the graph will be the reflection along the Y axis

b) $3f(x)$ - the graph will be stretched a factor of 3 in the Y direction, up and down

16)

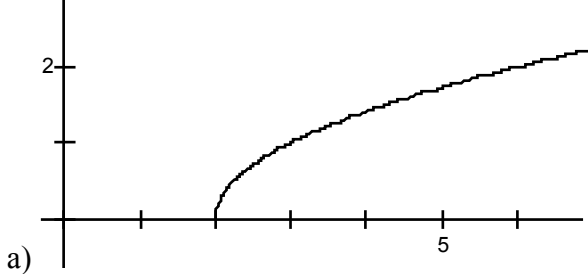
a) $\frac{1}{3}f(x-2)+5$

The original graph will be squeezed in the Y direction a factor of 3, and then moved up 5 and to the right 2

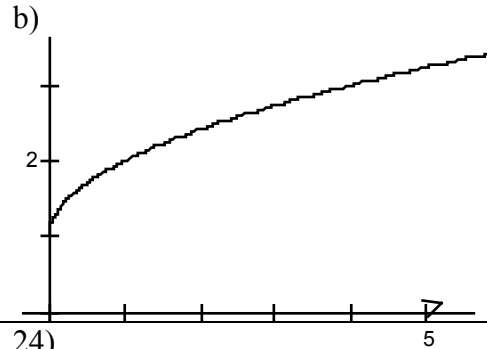
b) $4f(x+1)+3$

The original graph will be stretched a factor of 4 in the Y direction and then moved up 3 and to the left 1

24)

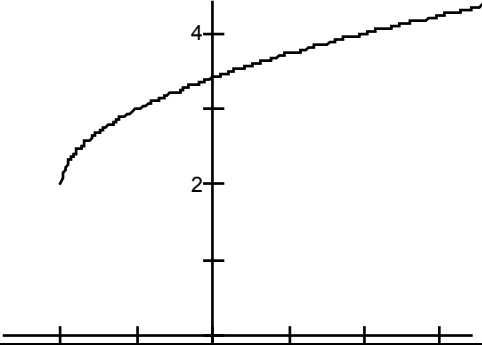


24)



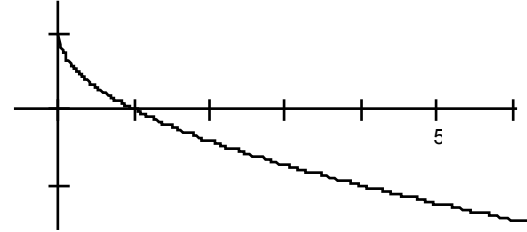
24)

c)

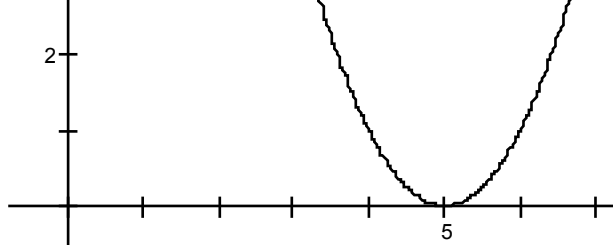


24)

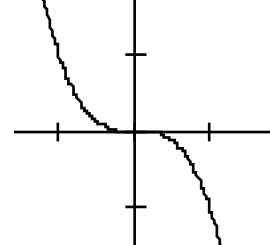
d)



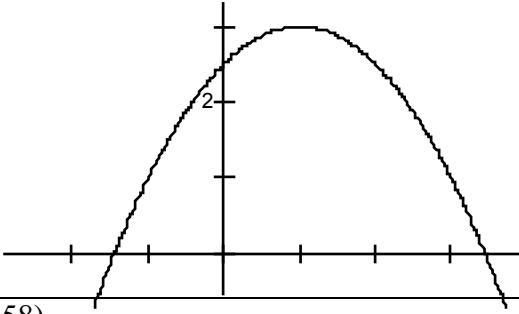
33)



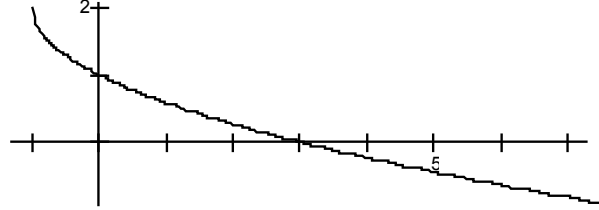
37)



47)



48)



58)

$$f(x) = |x|$$

reflect in the x -axis

$$f(x) = -|x|$$

shift 4 to the right

$$f(x) = -|x-4|$$

shift up 3

$$f(x) = -|x-4|+3$$

61)

$$f(x) = x^2$$

stretch vertically by 2

$$f(x) = 2x^2$$

shift down 2

$$f(x) = 2x^2 - 2$$

shift 3 to the right

$$f(x) = 2(x-3)^2 - 2$$

67)

$$f(x) = \sqrt{x}$$

$$g(x) = -f(x+2) = -\sqrt{x+2}$$

70)

$$\text{a) } y = \frac{1}{3}f(x) \rightarrow (2)$$

$$\text{b) } y = -f(x+4) \rightarrow (3)$$

$$\text{c) } y = f(x-4)+3 \rightarrow (1)$$

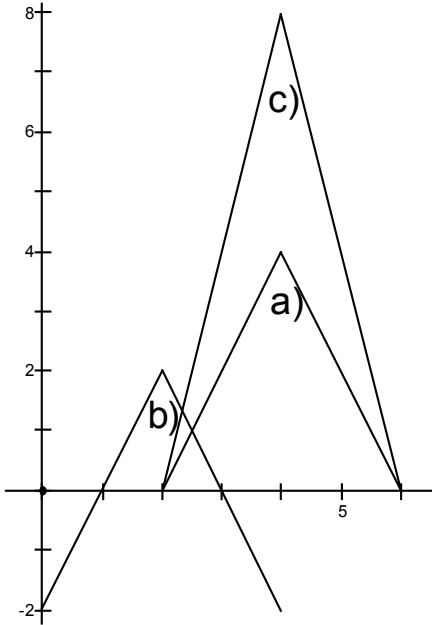
$$\text{d) } y = f(-x) \rightarrow (4)$$

71)

a) $y = f(x-2)$

b) $y = f(x)-2$

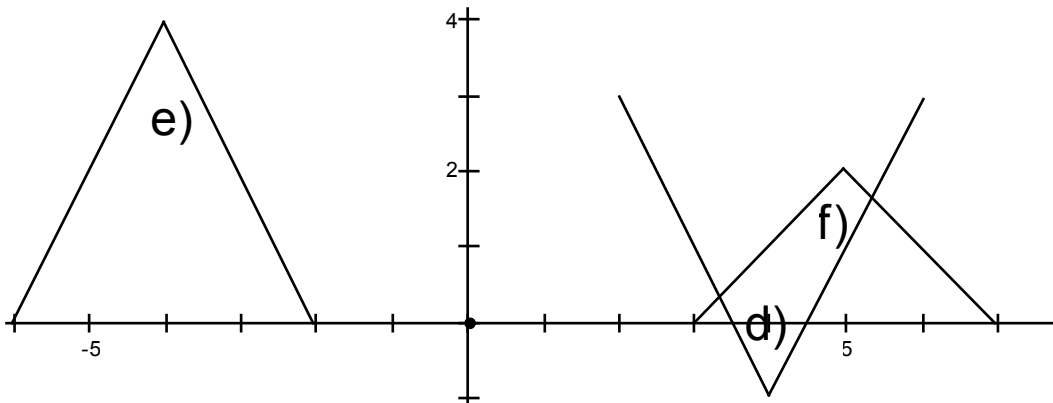
c) $y = 2f(x)$



d) $y = -f(x)+3$

e) $y = f(-x)$

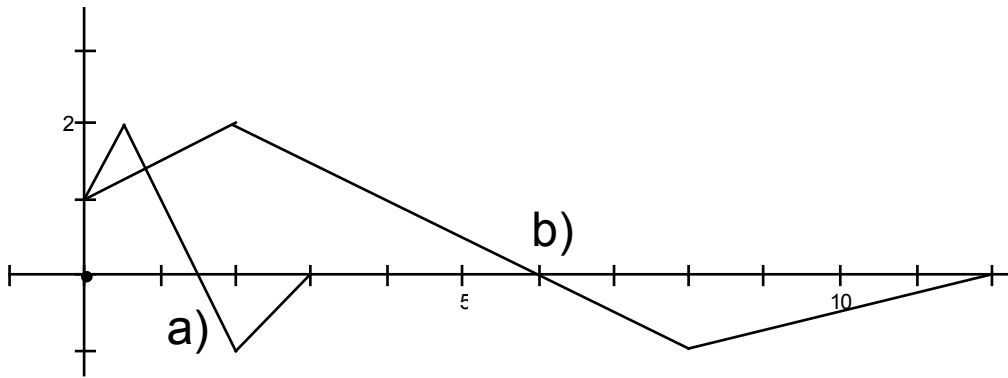
f) $y = \frac{1}{2}f(x-1)$



73)

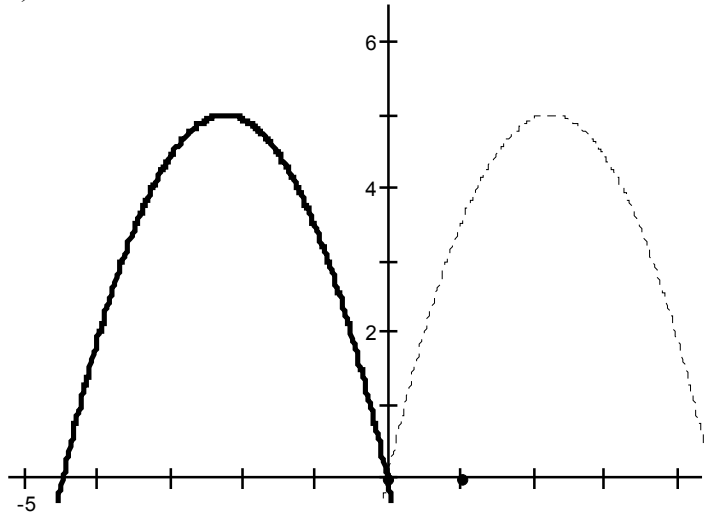
a) $y = f(2x)$

b) $y = f\left(\frac{1}{2}x\right)$



91)

a) Even



b) Odd

