

August 2014 Key

STOP! Are you sure you have done everything you can possibly do before you check your answers?

STOP! Do you only have a highlighter in your hand while making corrections? (No pens or pencils – fix the problem after you put the key away)

(1) 1	(9) 3	(17) 1
(2) 2	(10) 3	(18) 4
(3) 3	(11) 1	(19) 4
(4) 3	(12) 3	(20) 1
(5) 4	(13) 2	(21) 4
(6) 2	(14) 4	(22) 2
(7) 1	(15) 1	(23) 2
(8) 1	(16) 2	(24) 4

Scroll down for Part II, III, and IV answers

Part II – Show all work!

25. $x^2 + 10x + 24 = (x+a)(x+b)$
 $(x+4)(x+6)$
 b could be 4 or 6.

26. $B = P(1+r)^t$
 $P = \$3000$
 $r = 0.042$ (4.2%)
 $B = 3000(1+0.042)^t$
 $B = 3000(1.042)^t$

27. $g(x) = 185 + 0.03x$
 $f(x) = 275 + 0.025x$
 * In order for their weekly pay to be the same, $f(x) = g(x)$
 $275 + 0.025x = 185 + 0.03x$
 $-185 \quad -185$
 $90 + 0.025x = 0.03x$
 $-0.025x \quad -0.025x$
 $90 = 0.005x$
 $\$18,000 = x$

28.

	$2x^2$	$7x$	-10
x	$2x^3$	$7x^2$	$-10x$
5	$10x^2$	$35x$	-50

$2x^3 + 17x^2 + 25x - 50$

29. The vertex of $f(x)$ is $(1, 6)$.

Find the vertex of $g(x) = -\frac{1}{2}x^2 + 4x + 3$

Method 1:

Complete the square

$$g(x) = -\frac{1}{2}(x^2 - 8x + 16) + 3 + 8$$

$$g(x) = -\frac{1}{2}(x-4)^2 + 11$$

vertex: $(4, 11)$

Method 2:

Axis of symmetry:

$$x = -\frac{b}{2a} = \frac{-4}{2(-\frac{1}{2})} = 4$$

$$g(4) = -\frac{1}{2}(4)^2 + 4(4) + 3$$

$$g(4) = -\frac{1}{2}(16) + 4(4) + 3$$

$$g(4) = -8 + 16 + 3 = 11$$

vertex:

$(4, 11)$

$g(x)$ has a larger maximum value. $11 > 6$.

30. $3(x+3) \leq 5x-3$

$$3x+9 \leq 5x-3$$

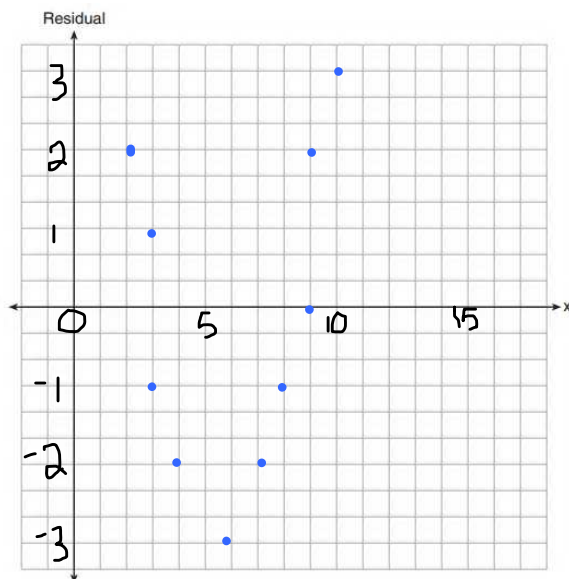
$$-2x+9 \leq -3$$

$$-2x \leq -12$$

$$x \geq 6$$

The smallest value of x to satisfy the inequality is 6 .

31. a)



b) It is a bad fit because the residuals aren't scattered. If the residuals have a pattern, the regression is not appropriate.

32. a) $x^2 + 6x + c = 13$

$$\left(\frac{6}{2}\right)^2 = (3)^2 = 9$$

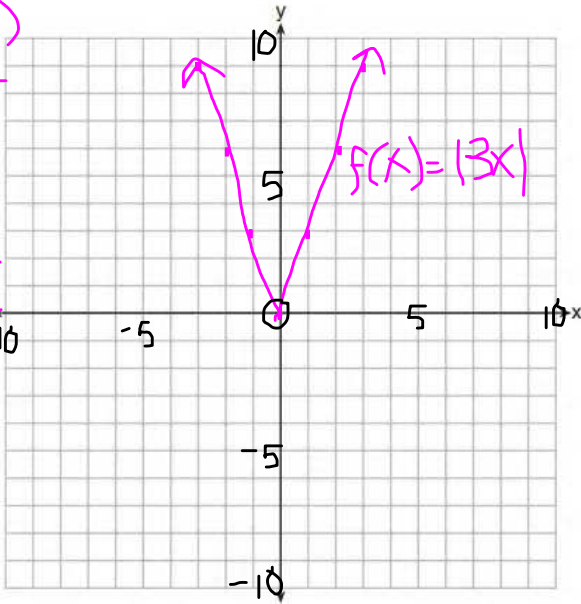
$$c = 9$$

b) Square $\frac{1}{4}b$.

Part III – Show all work!

33. a.)

x	f(x)
-3	9
-2	6
-1	3
0	0
1	3
2	6
3	9



b.)

The graph will shift down 2 units

c.)

The graph is shifted right 4.

34. a.)

$$2(A) = \left(\frac{1}{2}h(b_1 + b_2)\right)^2$$

$$\frac{2A}{h} = \frac{h(b_1 + b_2)}{h}$$

$$\frac{2A}{h} = b_1 + b_2$$

$$-b_2 \quad -b_2$$

$$b_1 = \frac{2A}{h} - b_2$$

b.)

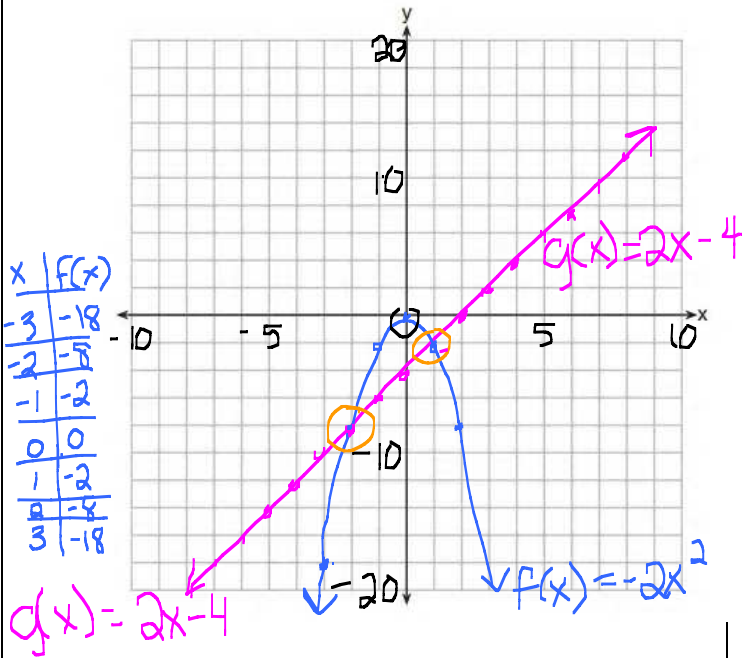
$$\left. \begin{matrix} A = 60 \\ h = 6 \\ b_2 = 12 \end{matrix} \right\} \begin{matrix} b_1 = \frac{2A}{h} - b_2 \\ b_1 = \frac{2(60)}{6} - 12 \end{matrix}$$

$$b_1 = \frac{120}{6} - 12$$

$$b_1 = 20 - 12$$

$$b_1 = 8 ft$$

35. a.)



b.)

$$\begin{aligned} x &= -2 \\ x &= 1 \end{aligned}$$

36.

Let width = w
 Let length = $w + 40$

$$w(w + 40) = 6000$$

$$w^2 + 40w = 6000$$

$$w^2 + 40w - 6000 = 0$$

$$(w + 100)(w - 60) = 0$$

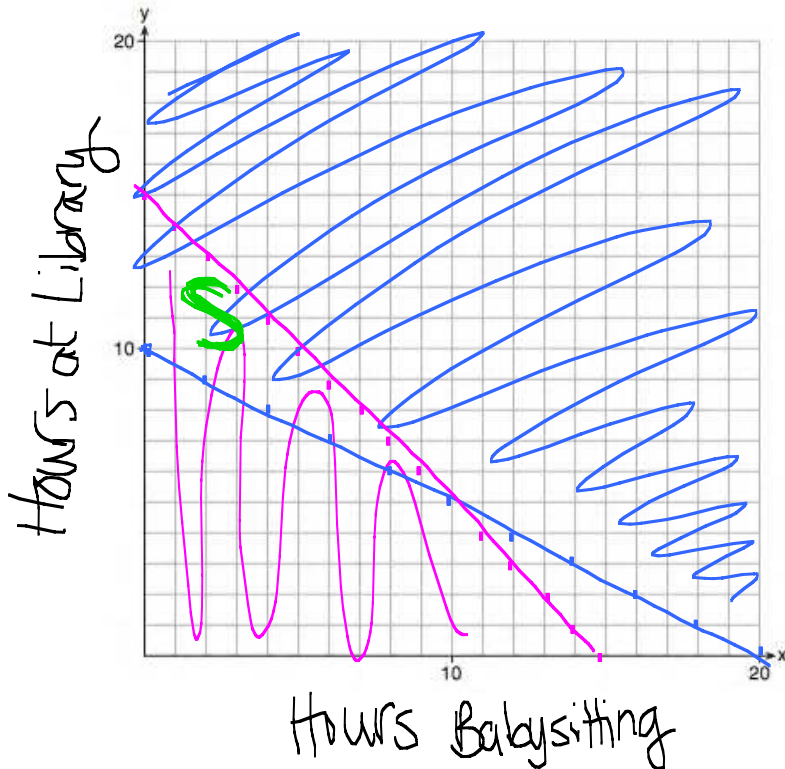
$\{-100, 60\}$
omit

width = 60 yd
length = 100 yd

Part IV – show all work

37. a.) $4x + 8y \geq 80 \rightarrow y \geq -\frac{1}{2}x + 10$ c.)
 $x + y \leq 15 \rightarrow y \leq 15 - x$

b.)



2 hrs babysitting
 12 hrs. at library

$$4(2) + 8(12) \geq 80$$

$$8 + 96 \geq 80$$

$$104 \geq 80 \checkmark$$

$$x + y \leq 15$$

$$2 + 12 \leq 15$$

$$14 \leq 15 \checkmark$$