

Unit 2 Review Answer Key

$$1) 8 = 2n - 4n$$

$$\frac{8}{-2} = \frac{-2n}{-2} \quad \text{Division Prop. of equality}$$

$$\boxed{-4 = n}$$

$$2) 0 = -7p - 6p$$

$$\frac{0}{-13} = \frac{-13p}{-13} \quad \text{Division Prop. of equality}$$

$$\boxed{p = 0}$$

$$3) -4 + 7x = 3(8 + x)$$

$$\begin{array}{r} -4 + 7x = 24 + 3x \\ \underline{-3x} \quad \underline{-3x} \end{array} \quad \begin{array}{l} \text{Distributive Prop.} \\ \text{of mult. over addition} \end{array}$$

$$\begin{array}{r} -4 + 4x = 24 \\ \underline{+4} \quad \underline{+4} \end{array} \quad \text{Subtraction Prop. of equality}$$

$$\begin{array}{r} 4x = 28 \\ \underline{4} \quad \underline{4} \end{array} \quad \text{Addition Prop. of equality}$$

$$\begin{array}{r} x = 7 \\ \underline{4} \quad \underline{4} \end{array} \quad \text{Division Prop. of equality}$$

$$\boxed{x = 7}$$

$$4) -14 + 4n = -(-7n - 1) \quad \text{Distributive Prop. of mult. over addition}$$

$$\begin{array}{r} -14 + 4n = 7n + 1 \\ \underline{-4n} \quad \underline{-4n} \end{array} \quad \text{Subtraction Prop. of equality}$$

$$\begin{array}{r} -14 = 3n + 1 \\ \underline{-1} \quad \underline{-1} \end{array} \quad \text{Subtraction Prop. of equality}$$

$$\frac{-15}{3} = \frac{3n}{3} \quad \text{Division Prop. of equality}$$

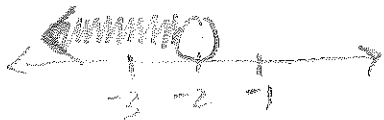
$$\boxed{-5 = n}$$

$$5) 8n + 5 + 4n < -19$$

$$12n + 5 < -19$$

$$\frac{12n}{12} < \frac{-24}{12}$$

$$n < -2$$



$$6) -8r - 2 + 1 < -1$$

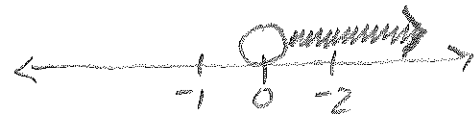
$$-8r - 1 < -1$$

$$+1 \quad +1$$

$$-8r < 0$$

$$\frac{-8r}{-8} < \frac{0}{-8}$$

$$r > 0$$



$$7) (4, 2) (2, -2)$$

$$\text{slope} = \frac{2 - (-2)}{4 - 2} = \frac{4}{2} = 2$$

$$y = 2x + b$$

$$2 = 2(4) + b$$

$$2 = 8 + b$$

$$-8 \quad -8$$

$$-6 = b$$

$$y = 2x - 6$$

plug in (4, 2)

or

x	y
0	-6
1	-4
given → 2	-2
3	0
given → 4	2

use slope

$$8) (2, 4) \text{ slope} = 3$$

$$y = 3x + b$$

$$4 = 3(2) + b$$

$$4 = 6 + b$$

$$-6 \quad -6$$

$$-2 = b$$

$$y = 3x - 2$$

or

given

x	y
0	-2
1	1
given 2	4

use slope

$$9) \quad 2 = -3x - y$$

$$+y \quad \quad +y$$

$$y + 2 = -3x$$

$$\quad -2 \quad -2$$

$$y = -3x - 2$$

$$10) \quad 2x - 3y = 3$$

$$\quad -2x \quad \quad -2x$$

$$-3y = -2x + 3$$

$$\quad \quad \quad -3 \quad \quad -3$$

$$y = \frac{2}{3}x - 1$$

$$11) \quad \text{Slope} = -1 \quad y\text{-int} = -5$$

$$y = -x - 5$$

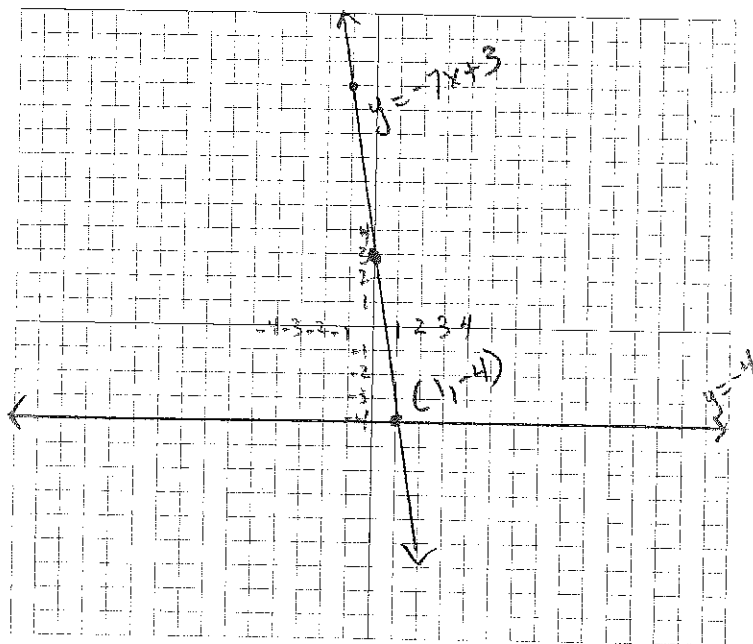
$$12) \quad \text{From graph: } y\text{-int} = -4 \quad \text{slope} = \frac{\text{rise}}{\text{run}} = \frac{-2}{1} = -2$$

$$y = -2x - 4$$

$$18) \quad y = -4$$

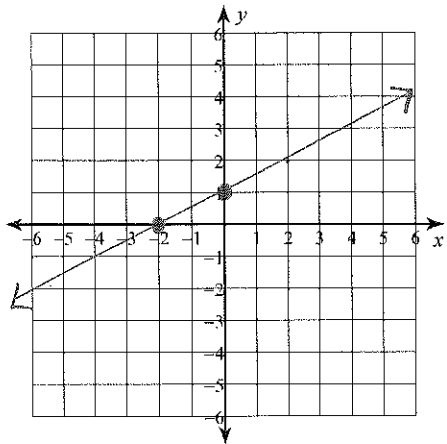
$$y = -7x + 3$$

$$(1, -4)$$

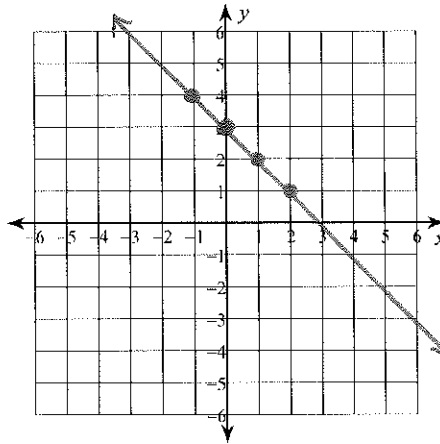


Sketch the graph of each line.

13) x -intercept = -2 , y -intercept = 1

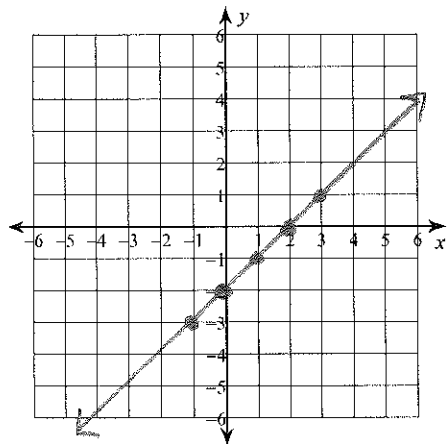


14) $x + y = 3$



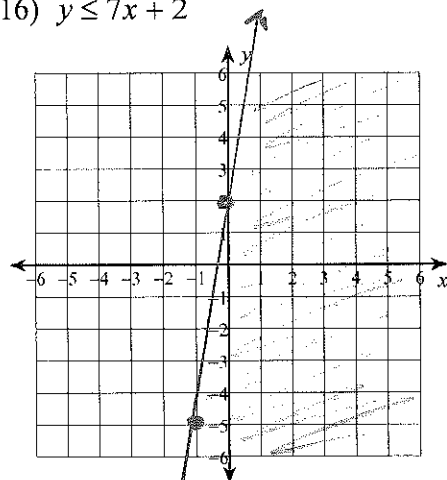
$$\begin{aligned} x + y &= 3 \\ -x &\quad -x \\ \hline y &= -x + 3 \\ \text{slope} &= -1 \\ y\text{-int} &= 3 \end{aligned}$$

15) $y = x - 2$ slope = 1 y -int = -2



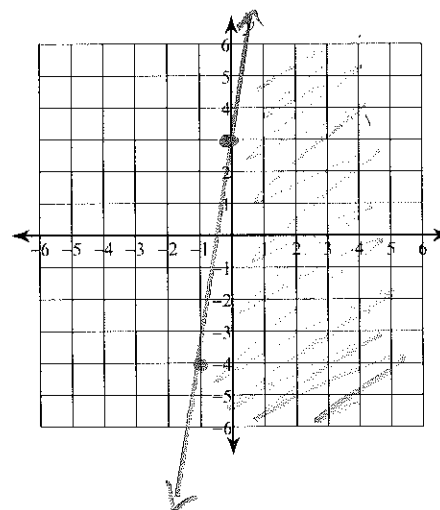
Sketch the graph of each linear inequality.

16) $y \leq 7x + 2$ slope = 7 y -int = 2



Solid
below

17) $7x - y \geq -3$



slope = 7
 y -int = 3
Solid
below

Solve each system by graphing.

18) $y = -4$
 $y = -7x + 3$

Solve each system by elimination.

19) $2x + 7y = 9$
 $9x - 14y = -5$

20) $3x + 7y = -23$
 $10x + 5y = 15$

$$19) \begin{cases} 2x + 7y = 9 & \times 2 \\ 9x - 14y = -5 \end{cases}$$

$$\boxed{(1, 1)}$$

$$\begin{array}{r} 4x + 14y = 18 \\ 9x - 14y = -5 \\ \hline 13x = 13 \\ x = 1 \end{array}$$

$$\begin{array}{r} 2(1) + 7y = 9 \\ 2 + 7y = 9 \\ 7y = 7 \\ y = 1 \end{array}$$

$$20) \begin{cases} 3x + 7y = -23 & \times 10 \\ 10x + 5y = 15 & \times 3 \end{cases}$$

$$\begin{array}{r} 3x + 7(-5) = -23 \\ 3x - 35 = -23 \\ +35 \quad +35 \end{array}$$

$$3x = 12$$

$$x = 4$$

$$\begin{array}{r} -30x - 70y = 230 \\ 30x + 15y = 45 \\ \hline \end{array}$$

$$\begin{array}{r} -55y = 275 \\ \hline -55 \quad -55 \end{array}$$

$$y = -5$$

$$\boxed{(4, -5)}$$

$$\begin{array}{l} 21) p(x) = 3x + 4 \\ p(2) = 3(2) + 4 \\ p(2) = 6 + 4 \\ p(2) = \underline{\underline{10}} \end{array}$$

$$\begin{array}{l} 22) g(a) = 3a - 1 \\ g(6) = 3(6) - 1 \\ g(6) = 18 - 1 \\ g(6) = \underline{\underline{17}} \end{array}$$

$$23) h(n) = 2n + 3$$

$$\begin{array}{r} 13 = 2n + 3 \\ -3 \quad -3 \end{array}$$

$$\begin{array}{r} 10 = 2n \\ \underline{2} \quad \underline{2} \end{array}$$

$$\boxed{5 = n}$$

$$24) h(x) = 4x + 5$$

$$\begin{array}{r} -101 = 4x + 5 \\ -5 \quad -5 \end{array}$$

$$\begin{array}{r} -106 = 4x \\ \underline{4} \quad \underline{4} \end{array}$$

$$\boxed{-26.5 = x}$$

25) $-10, 190, 390, 590, \dots$

$d = 200$

$a_n = 200n - 210$

$a_{37} = 200(37) - 210$

$a_{37} = \underline{\underline{7190}}$

x	y
0	-210
1	-10
2	190
3	390
4	590

26) $28, 34, 40, 46, \dots$
1 2 3 4

$d = 6$

$\begin{cases} a_1 = 28 \\ a_n = a_{n-1} + 6 \end{cases}$

$a_5 = 52$
 $a_6 = 58$
 $a_7 = 64$

27) $a_{14} = -70$ $a_{39} = -270$

x	y
14	-70
39	-270

$\Delta x = 25$ $\Delta y = -200$

$d = \frac{\Delta y}{\Delta x} = \frac{-200}{25} = -8$

$a_n = -8n + 42$

$a_n = -8n + a_0$

$-70 = -8(14) + a_0$

$-70 = -112 + a_0$
 $+112$ $+112$

$42 = a_0$

28) $a_1 = -31$

$d = -3$

$a_n = -3n - 28$

x	y
0	-28
1	-31

} use d

29) $a_n = 10n + a_0$

$170 = 10(16) + a_0$

$170 = 160 + a_0$
 -160 -160

$a_n = 10n + 10$

$10 = a_0$

30) let a = price of adult tickets
 let s = price of student tickets

$$\begin{aligned} 6a + 2s &= 96 \\ 2a + 14s &= 232 \end{aligned}$$

$$6a + 2(15) = 96$$

$$\begin{array}{r} 6a + 30 = 96 \\ -30 \quad -30 \end{array}$$

$$\frac{6a}{6} = \frac{66}{6}$$

$$a = \$11$$

$$6a + 2s = 96$$

$$(2a + 14s = 232) \cdot 3$$

$$6a + 2s = 96$$

$$\underline{-6a - 42s = -696}$$

$$\begin{array}{r} -40s = -600 \\ \underline{-40} \quad \underline{-40} \end{array}$$

$$s = \$15$$

31) let r = price of one rose bush
 let i = price of one pot of ivy

$$\begin{aligned} 11r + 12i &= 253 \\ 6r + 6i &= 132 \end{aligned}$$

$$11(11) + 12i = 253$$

$$\begin{array}{r} 12i + 12i = 253 \\ -12i \quad -12i \end{array}$$

$$\frac{12i}{12} = \frac{132}{12}$$

$$i = \$11$$

$$11r + 12i = 253$$

$$(6r + 6i = 132) \cdot 2$$

$$11r + 12i = 253$$

$$\underline{-12r - 12i = -264}$$

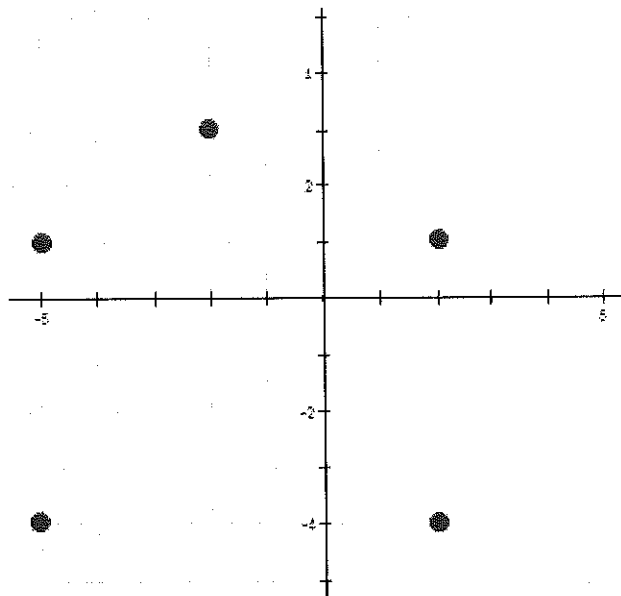
$$\begin{array}{r} -r = -11 \\ \underline{-1} \quad \underline{-1} \end{array}$$

$$r = \$11$$

32) Write the domain and range of the following set of points:

$$D = \{-5, -2, 2\}$$

$$R = \{-4, 1, 3\}$$



33) Label the following characteristics of the given function:

Domain: $(-\infty, \infty)$

Range: $[-15, \infty)$

x-int: $(-3, 0)$ $(-1, 0)$ $(1, 0)$ $(3, 0)$

y-int: $(0, 9)$

intervals of increase: $(-2, 0)$ \cup $(2, \infty)$

intervals of decrease: $(-\infty, -2)$ \cup $(0, 2)$

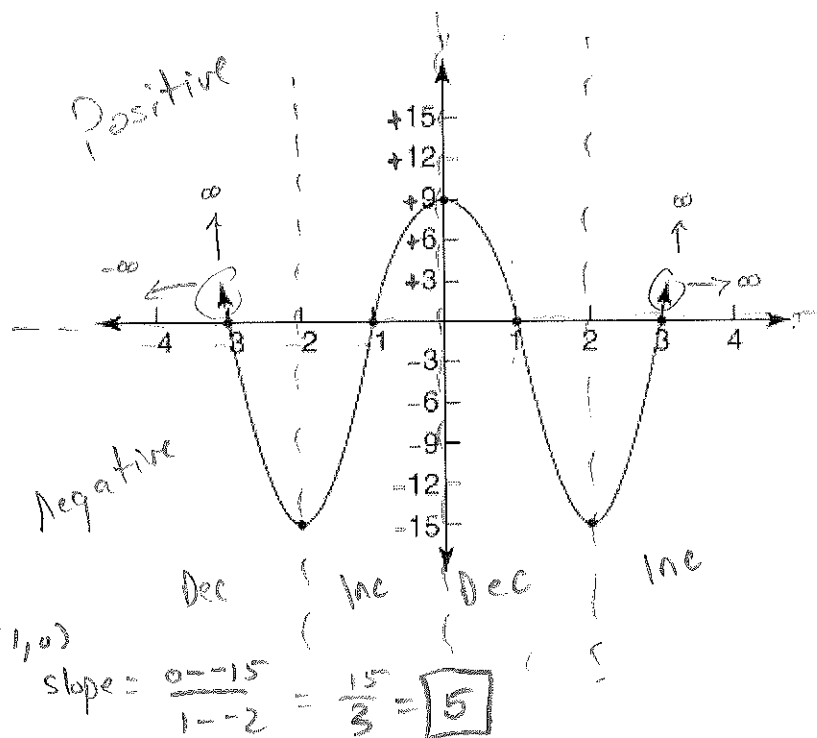
positive intervals: $(-\infty, -3)$ $(-1, 1)$ $(3, \infty)$

negative intervals: $(-3, -1)$ $(1, 3)$

maximums: 9 (relative max only)

minimums: -15 (absolute min)

rate of change from $x=-2$ to $x=1$: $(-2, -15)$ $(1, 0)$



34) Solve for a: $M = \frac{a+b}{2}$

35) Solve for p: $\frac{1}{2}(p+q) = m$

$$34) 2 \cdot M = \left(\frac{a+b}{2}\right) \cdot 2$$

$$2M = \frac{a+b}{-b}$$

$$2M - b = a$$

$$35) \frac{1}{2}(p+q) = m \cdot 2$$

$$p+q = 2m$$

$$p = 2m - q$$