

Algebra P4

Spring Final Review 3 of 3

Directions: Do not use a calculator. All answers must be simplified and exact.

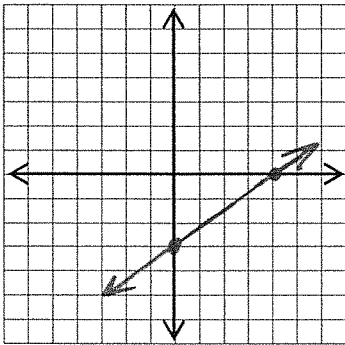
Key

Graph by finding the x and y intercept(s). If the graph is a parabola then find the vertex as well.

62) $3x - 4y = 12$

$3(0) - 4y = 12 \Rightarrow y = -3$

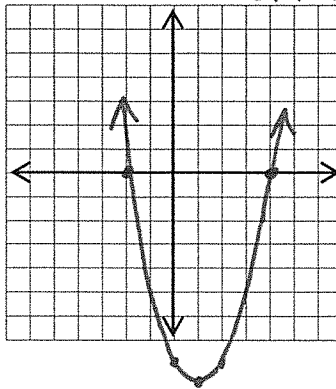
$3x - 4(0) = 12 \Rightarrow x = 4$



63) $y = x^2 - 2x - 8$

$0 = (x-4)(x+2)$

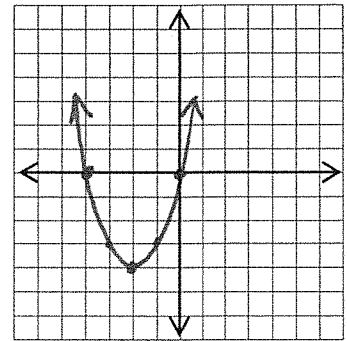
$x = 4, -2$ $y = 1^2 - 2(1) - 8 = -9$
vertex: $(1, -9)$



64) $y = x^2 + 4x$

$0 = x^2 + 4x$

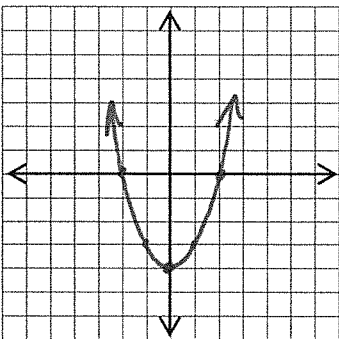
$x = 0, -4$ $y = (-2)^2 + 4(-2) = -4$
vertex: $(-2, -4)$



65) $y = x^2 - 4$

$0 = (x-2)(x+2)$

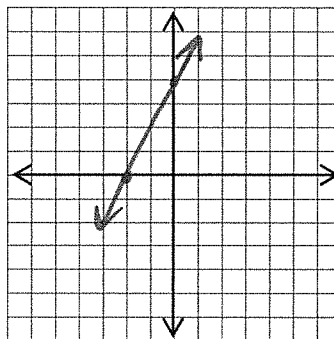
$x = 2, -2$ vertex: $(0, -4)$



66) $-2x + y = 4$

$-2(0) + y = 4 \Rightarrow y = 4$

$-2x + 0 = 4 \Rightarrow x = -2$



Solve each of the following systems using the method of your choice (graphing, substitution, elimination)

67) $15x - 5y = 30$

$y = 2x + 3$

$15x - 5(2x + 3) = 30$

$x = 9$ $y = 2(9) + 3$
 $y = 21$

68) $3x + y = 5$

$+ 2x - y = 10$

$5x = 15$

$x = 3$ $3(3) + y = 5$
 $y = -4$

69) $(5x - 7y = 31) \cdot 4 = 20x - 28y = 124$
 $(-4x + 2y = -14) \cdot 5 = -20x + 10y = -70$

$-18y = 54$

$5x - 7(-3) = 31$

$5x = 10$

$x = 2$

$y = -3$
 $x = 2$

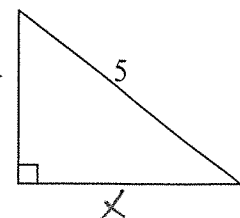
70) Find the missing side length:

$x^2 + (3\sqrt{2})^2 = 5^2$

$x^2 + 18 = 25$

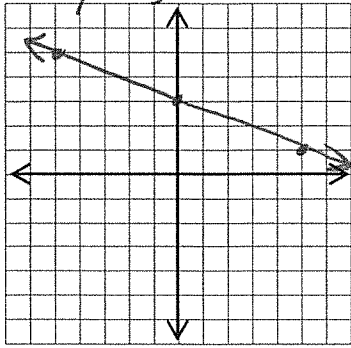
$x^2 = 7$

$x = \sqrt{7}$



Graph. Find the domain and range when requested.

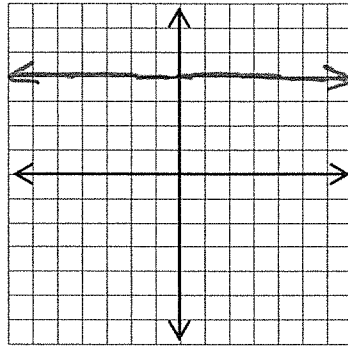
71) $5y = 15 - 2x$
 $y = -\frac{2}{5}x + 3$



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

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

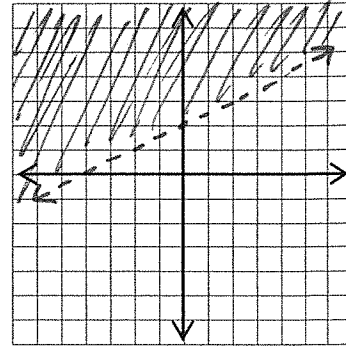
72) $y = 4$



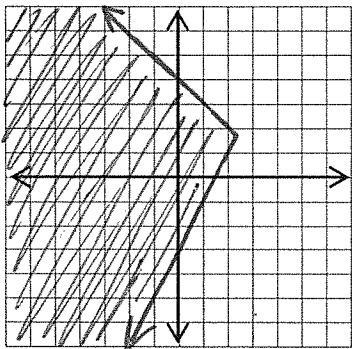
Domain: $(-\infty, \infty)$

Range: $y = 4$

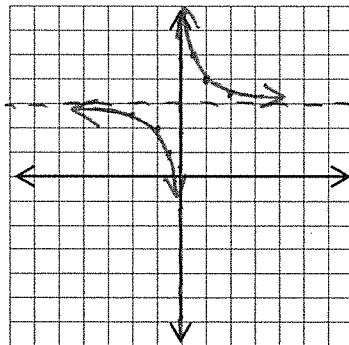
73) $y - \frac{1}{2}x > 2 \rightarrow y > \frac{1}{2}x + 2$



74) $2x - y \leq 3 \rightarrow y \geq 2x - 3$
 $x + y \leq 4 \rightarrow y \leq -x + 4$



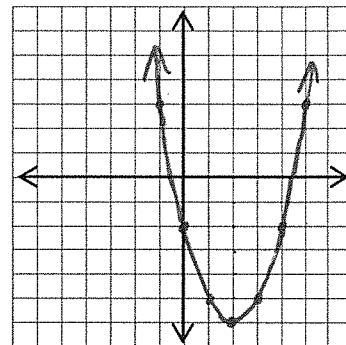
75) $y = \frac{1}{x} + 3$



Domain: $x \neq 0$

Range: $y \neq 3$

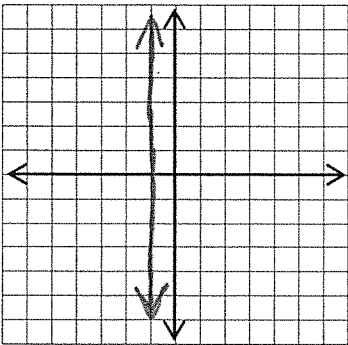
76) $y = x^2 - 4x - 2 = (x - 2)^2 - 6$



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

Range: $[-6, \infty)$

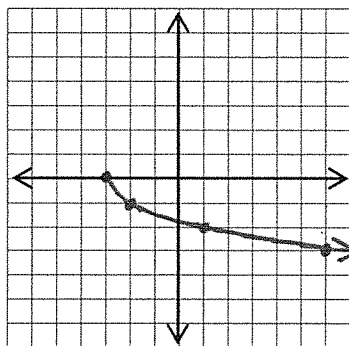
77) $x = -1$



Domain: $x = -1$

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

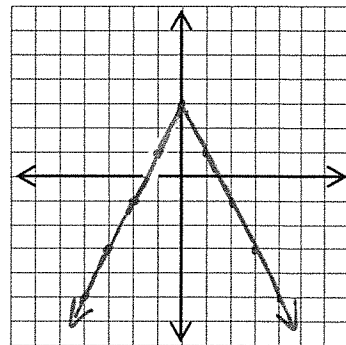
78) $y = -\sqrt{x+3}$



Domain: $[-3, \infty)$

Range: $(-\infty, 0]$

79) $y = -2|x| + 3$

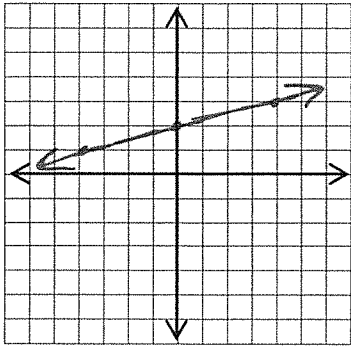


Domain: $(-\infty, \infty)$

Range: $(-\infty, 3]$

80) $x = 4y - 8$

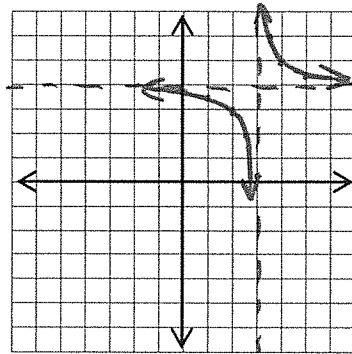
$y = \frac{1}{4}x + 2$



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

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

81) $y = \frac{1}{x-3} + 4$

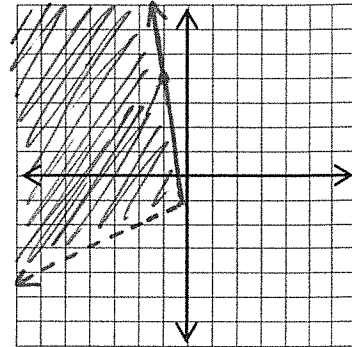


Domain: $x \neq 3$

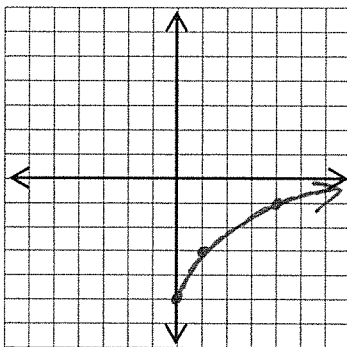
Range: $y \neq 4$

82) $y > \frac{1}{2}x - 1$

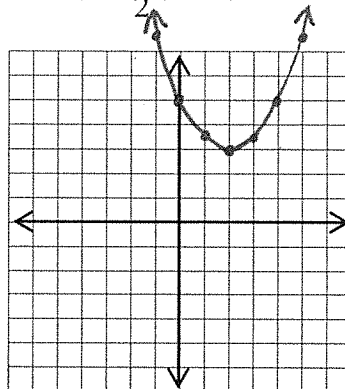
$6x + y \leq -2 \rightarrow y \leq -6x - 2$



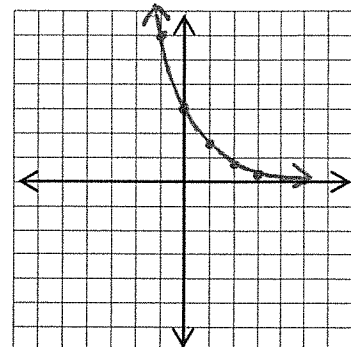
83) $y = 2\sqrt{x} - 5$



84) $y = \frac{1}{2}(x-2)^2 + 3$



85) $y = 3\left(\frac{1}{2}\right)^x$



86) A girl throws a ball at a velocity of 32 ft/sec upward from the top of a 48 ft tall building. The equation that models this situation is $h(t) = -16t^2 + 32t + 48$.

a) When will the ball hit the ground?

$0 = -16t^2 + 32t + 48$
 $0 = -16(t-3)(t+1)$ $t = 3, -1$

b) When will the ball be at its maximum height?

$t = \frac{-b}{2a} = \frac{-32}{2(-16)} = \boxed{1 \text{ second}}$

c) What is the maximum height of the ball?

$-16(1)^2 + 32(1) + 48 = \boxed{64 \text{ ft}}$

87) Solve each equation for the indicated variable.

a. $E = \frac{1}{2}mv^2$, for v

$v^2 = \frac{2E}{m}$ $v = \sqrt{\frac{2E}{m}}$

b. $V = \pi r^2 h$, for h

$h = \frac{V}{\pi r^2}$

c. $P = \frac{1}{5}\sqrt{r}$, for r

$\sqrt{r} = 5P$
 $r = 25P^2$

88) Describe the following data set using measures of center, spread and shape.

boxes of Cheerios Mr. Simon eats in various months: 6, 12, 4, 3, 15, 13, 7, 6, 4, 19, 2, 7, 6, 8, 5, 5, 11, 4

The center of the data is around 7 (med=6, mean=7.6). The data is fairly spread out (range=17, s=4.6) and skewed right.