

$$2 = 4x^2 - 30$$

$$y = \frac{1}{4}(x+1)^2 + 9$$

Ch. 4 Practice Test part 1

1) Given the function $f(x) = x^2 - 8x + 12$ find the following.

a) Rewrite this function into factored form?

$$(x-6)(x-2)$$

b) Rewrite this function into vertex form?

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

2) Given the function $f(x) = x^2 + 2x - 8$

a) What are the x-intercepts?

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

$$(-4, 0) \quad (2, 0)$$

b) What is the vertex?

$$(-1, -9)$$

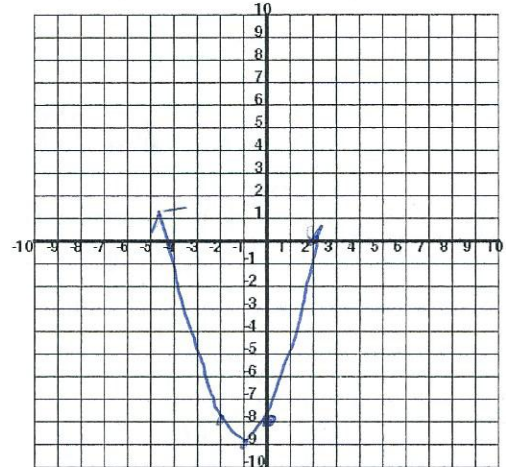
c) What is the y-intercept?

$$(0, -8)$$

d) What is the vertex form of the equation?

$$y = (x+1)^2 - 9$$

D) Graph the function with at least 3 points.



$$\pm 3 = x+1$$

$$3 = x+1$$

$$2 = x$$

$$-3 = x+1$$

$$-4 = x$$

3) Given the function $y = (5x+3)(4x-1)$

a) What are the x-intercepts?

$$5x+3=0 \quad \left(-\frac{3}{5}, 0\right) \quad \left(\frac{1}{4}, 0\right)$$

$$x = -\frac{3}{5}$$

b) What are the zeros?

$$x = -\frac{3}{5}, \frac{1}{4}$$

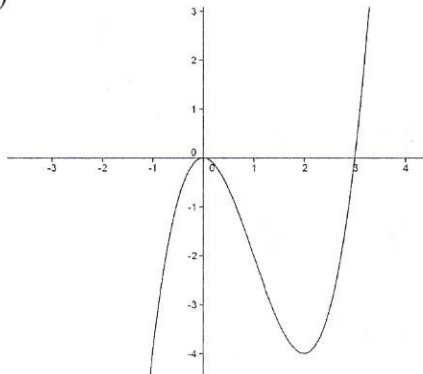
c) What would the function be in y-intercept form?

$$20x^2 - 5x + 12x - 3$$

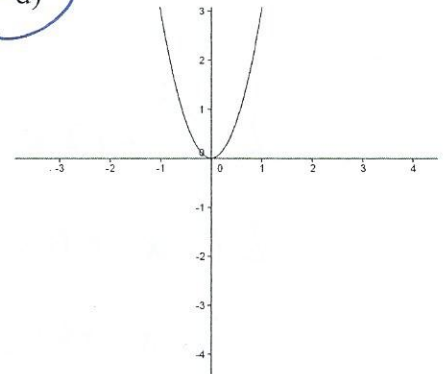
$$y = 20x^2 + 7x - 3$$

4) Circle all of the examples of a quadratic function.

a) $y = x^2 - 4$ c)



d)



b) $y = x + 4$

5) Solve the following quadratic function equations.

a) $32 = (x-2)^2$

$\pm 4\sqrt{2} = x-2$

$x-2 = 4\sqrt{2}$

$x-2 = -4\sqrt{2}$

$x = 2 + 4\sqrt{2}$ $x = 2 - 4\sqrt{2}$

b) $6 \left(6 - \frac{1}{6}x^2 \right) 6$

$\sqrt{36} = \sqrt{x^2}$
 $\pm 6 = x$

6) Find the zeros/roots of the equations below.

a) $y = 3x^2 - 3x - 18$

b) $y = x^2 - 5x - 14$

$3(x^2 - x - 6)$

$(x-7)(x+2)$

$3(x-3)(x+2)$

$x = 7, -2$

$x = 3, -2$

7) Find the zeros/roots of the equations below.

a) $y = (x-2)^2 - 4$

b) $y = 2(x-1)^2 - 54$

$x-2 = 2$ or $x-2 = -2$
 $x = 4$ or $x = 0$

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

$\sqrt{4} = \sqrt{(x-2)^2}$

$\pm 2 = x-2$

$27 = (x-1)^2$

$\pm 3\sqrt{3} = x-1$

$x = 1 + 3\sqrt{3}$ or $x = 1 - 3\sqrt{3}$

6) Change the function from standard form into vertex form, and then state the vertex.

$y = (4x^2 - 8x) - 3$

$4(x^2 - 2x + 1 - 1) - 3$

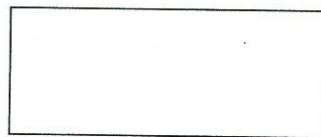
$(1, -7)$ is
Vertex

$4(x^2 - 2x + \left(\frac{-2}{2}\right)^2) - 3$

$4(x^2 - 2x + 1) - 4 - 3$

$y = 4(x-1)^2 - 7$

7) Find the lengths of each of the sides of the fence below, given that the area is 32 yards squared.



$2X = 4$

$X+6 = 8$

$2x^2 + 12x - 32 = 0$

$2(x+6)(x-2) = 0$

$2(x+8)(x-2)$

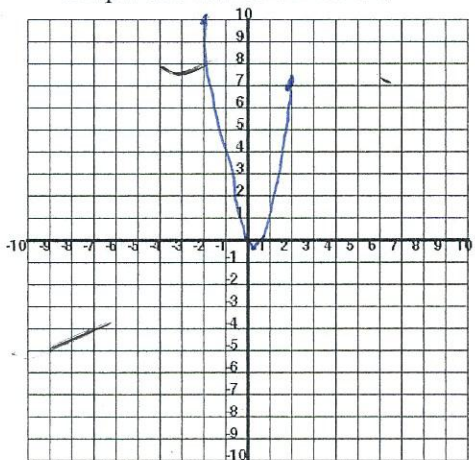
$x = -8$ or $x = 2$

Calc 10)

$$y = 2x^2 - x$$

Does the parabola open up or down?

Graph the function below



What is the y-intercept of the parabola?

UP

What is the vertex of the equation?

$$\left(\frac{1}{4}, -\frac{1}{8}\right)$$

$$\frac{2}{16} - \frac{1}{4}$$

What is the axis of symmetry?

$$x = \frac{1}{4}$$

$$\frac{2}{16} - \frac{4}{16}$$

What is the vertex form of the equation?

$$2\left(x - \frac{1}{4}\right)^2 - \frac{1}{8}$$

What are the zeros of the equation?

$$0, \frac{1}{2}$$

What are the x-intercepts?

$$(0, 0) \left(\frac{1}{2}, 0\right)$$

What is the x-intercept form of the equation?

$$x(2x - 1)$$

11) Simplify the following radical expressions

a) $\sqrt{72}$
 $6\sqrt{2}$

b) $\sqrt{18} \cdot \sqrt{2}$
 6

c) $\sqrt{\frac{28}{25}}$
 $\frac{2\sqrt{7}}{5}$

d) $\frac{4}{3 - \sqrt{7}} \cdot \frac{3 + \sqrt{7}}{3 + \sqrt{7}}$

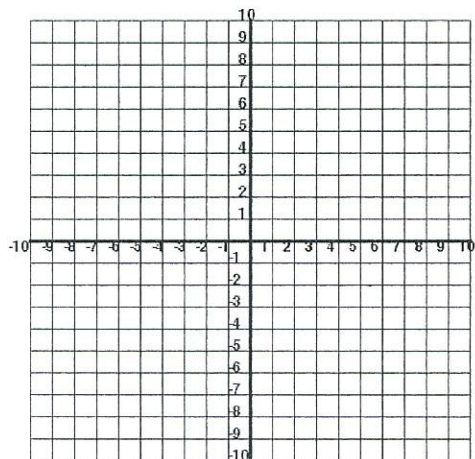
$$\frac{12 + 4\sqrt{7}}{9 - 7} = \frac{12 + 4\sqrt{7}}{2}$$

$$\boxed{6 + 2\sqrt{7}}$$

12) $y = -1(x - 4)^2 + 7$

Does the parabola open up or down?

Graph the function



What is the vertex of the equation?

$$(4, 7)$$

$$0 = -1(x - 4)^2 + 7$$

What is the axis of symmetry?

$$x = 4$$

$$7 = (x - 4)^2$$

$$\pm\sqrt{7} = x - 4$$

What are the zeros of the equation?

$$4 + \sqrt{7}, 4 - \sqrt{7}$$

What are the x-intercepts?

$$(4 + \sqrt{7}, 0), (4 - \sqrt{7}, 0)$$

13) Find the zeros of the functions below by factoring.

a) $y = x^2 - 49$
 $(x - 7)(x + 7)$
 $7, -7$

b) $y = x^2 + 11x + 30$
 $(x + 6)(x + 5)$
 $-6, -5$