

1. Graph $y = -2x^2 + 12x - 8$ $\frac{-12}{2(-2)} = 3$

$$\begin{array}{r} 5 \\ 3 \\ 2 \\ 1 \end{array} \overline{) 10} \begin{array}{r} 2 \\ 0 \\ 8 \\ 2 \end{array}$$

a. This graph has a Max. or Min. value. (circle one)

b. The y-intercept is -8

c. The vertex is (3, 10)

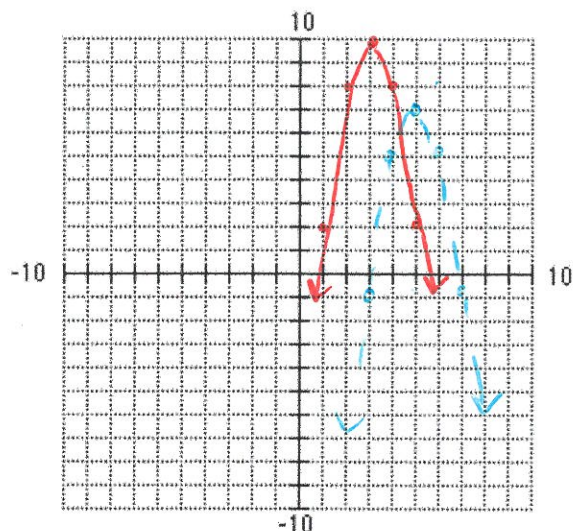
d. The axis of symmetry is x = 3

e. The domain is \mathbb{R}

f. The range is $y \leq 10$

g. On the graph, shift the parabola 3 units down and two units right.

The new vertex is (5, 7).



2. Emmie is a track and field athlete who competes in shot put (an event that requires pushing a heavy ball through the air as far as possible). On Emmie's last 'put' the height of the ball, h , when x feet from Emmie can be modeled by the equation $h = -0.021x^2 + 0.6x + 6$.

a. Find the maximum height of the throw. 10.29 ft

b. Determine how far from Emmie the shot put landed. 36.42 ft

3. Rewrite the following equation in vertex form.

$$y = x^2 - 8x + 15$$

Vertex form: $y = (x-4)^2 - 1$

Vertex: (4, -1)

$$\begin{aligned} y &= x^2 - 8x + 15 \\ x^2 - 8x + 16 &+ 15 - 16 \\ y &= (x-4)^2 - 1 \end{aligned}$$

4. Use: $-3x^2 + 6x - 1 = y$

a. How many terms? 3

b. Leading coefficient? -3

c. Values of a, b, & c?

$$a = -3, b = 6, c = -1$$

d. Discriminant = 24

e. How many solutions?

2

f. Use the quadratic formula to find the solutions and leave answer as simplified radical $\frac{-6 \pm \sqrt{24}}{-6} = \frac{-6 \pm 2\sqrt{6}}{-6}$

g. Use the quadratic formula to find the solutions as decimal values (round to 100ths).

.18 & 1.82