Panel 1 (top left)
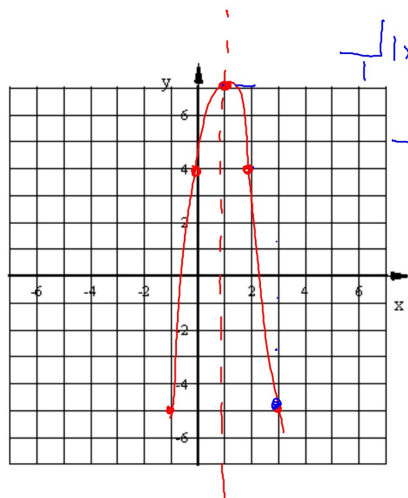
Graph this parabola with 5 points. $y = -3x^2 + 6x + 4$

$-1 | x \cdot 3 = -3$ LOS $-\frac{b}{2a}$

$-1 | 4x \cdot 3 = -12$ $x = \frac{-6}{-6} = 1$
$\quad\quad 2$

Vertex $(1, 7)$

X	Y
3	-5

Panel 2 (top right)

Finding the vertex with a graphing calculator.

Graph the following quadratic in a standard window

$y = 0.3x^2 - x - 4$ $y = x^2 + 6x + 1$

(1.67, -4.83)

$(-3, -8)$

Panel 3 (bottom left)

Does this parabola have a Maximum or a Minimum?

$y = 3x^2 + 18x - 11$ MIN

- Find the minimum value of the function.
  -38

- When does the minimum occur?
  -3

$(-3, -38)$

(x,y)

When this value occurs — The value of the function

Panel 4 (bottom right)

A company makes syringes. The following eqaution models their Profit as a function of the number of syringes made per hour.

$(400, 70,750)$

$$P(s) = -0.45s^2 + 360s - 1250$$

1. Find the number of syringes that should be made per hour in order to maximize the company's Profit.
   400

2. What is the maximum Profit?
   $70,750   Vertex

$-\frac{b}{2a} = \frac{-360}{2(-.45)}$

$= 400$

A ball is shot into the air with an initial velocity of 80 ft/sec from the top of a 50 ft tall building. The following equation models the height (ft) of the object as a function of time (sec).

$$\frac{-80}{2(-16)} = 2.5$$

$$h(t) = -16t^2 + 80t + 50$$

1. Find the time it takes the object to reach its maximum height.

$$2.5 \ Sec$$

2. Find the maximim height of the object.

$$h(2.5) = 150 \ ft.$$