

**Factored Form: Part II**  
**Determining the Vertex from Factored Form**

**Review:**

Standard Form  $\rightarrow y = ax^2 + bx + c$

The y-intercept is 'c'.

Factored Form  $\rightarrow y = a(x - r)(x - s)$

The x-intercept(s) are 'r' and 's'.

**Practice:**

For each quadratic equation, determine the x-intercept(s) and y-intercept.

a)  $y = x^2 + 3x - 10$

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

c)  $y = x^2 - 5x + 7$

**Determining the Vertex from Factored Form**

The vertex is a point on the parabola that has an x-coordinate and a y-coordinate.

1. Determine the x-coordinate by averaging the x-intercepts.

$$x = \frac{x_{\text{int}1} + x_{\text{int}2}}{2}$$

2. Determine the y-coordinate by substituting the x-coordinate of the vertex into the original equation.

**Example**

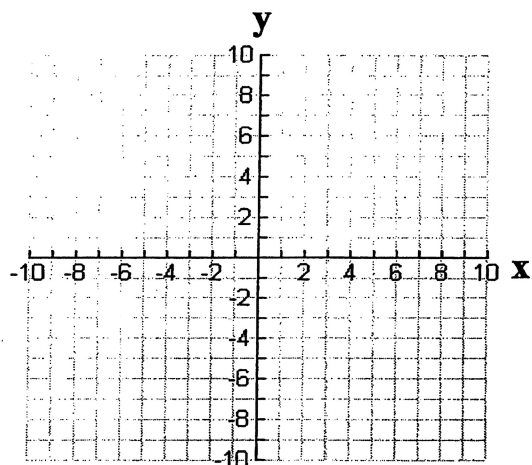
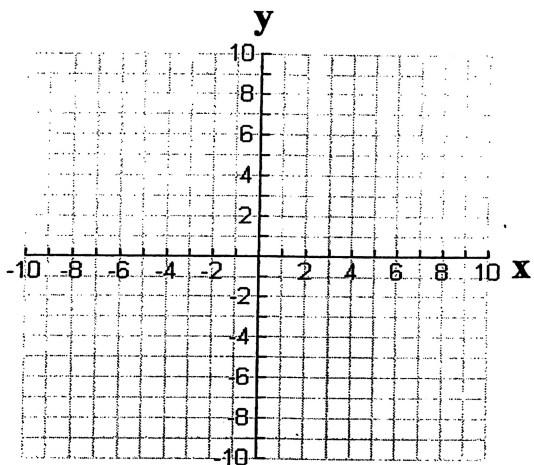
Determine the y-intercept, x-intercept(s), and the vertex of the parabola defined by  $y = x^2 - 4x + 3$ .

## Homework

For each quadratic relationship, determine the y-intercept, the x-intercept(s), and the vertex. Use this information to graph the parabolas.

a)  $y = x^2 - 6x + 5$

b)  $y = x^2 + 2x - 8$



c)  $y = -2x^2 - 12x - 10$

d)  $y = x^2 - 6x + 9$

