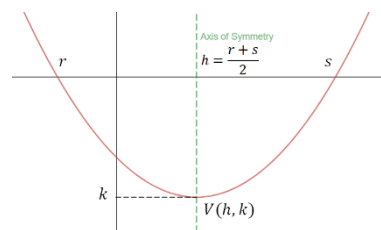


6.3 Graph (factorable) Quadratics using the x-intercepts

A Graph Quadratics using the x-intercepts

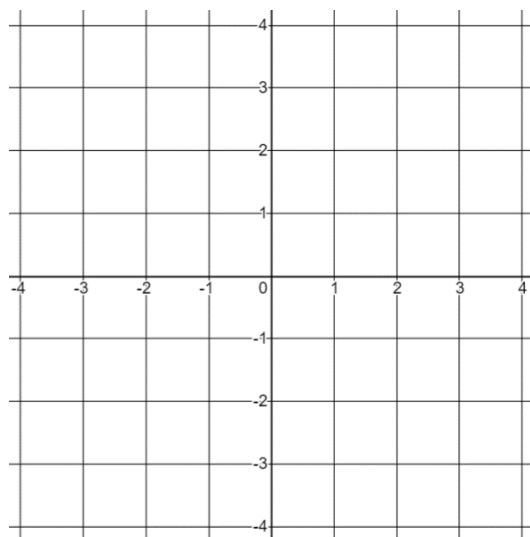
In order to graph a factorable quadratic relation:

- ✓ Write the quadratic relation in the factored form $y = a(x - r)(x - s)$
- ✓ Find the x-intercept points
- ✓ Find the y-intercept point (substitute $x = 0$)
- ✓ Find h by using $h = \frac{r+s}{2}$
- ✓ Find k by substitution $x = h$ into standard or factored form
- ✓ Write the vertex form $y = a(x - h)^2 + k$
- ✓ Find the vertex point $V(h, k)$
- ✓ Sketch the graph by using all key points

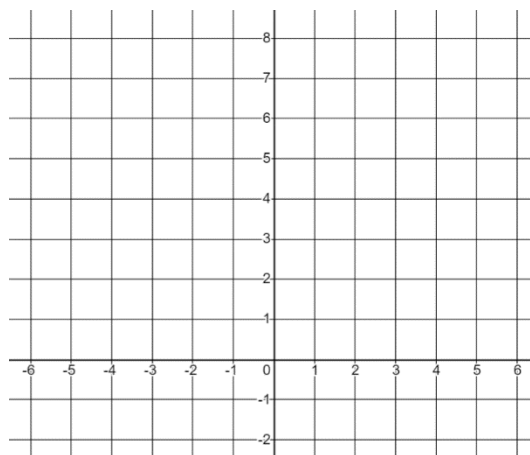


Example 1. Graph the following quadratic relations.

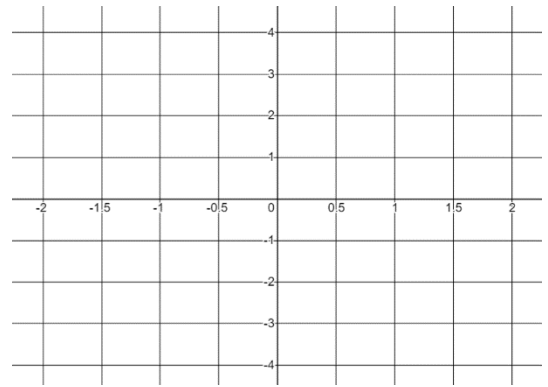
a) $y = 2x^2 - 4x$



b) $y = -0.5(x + 3)(x - 5)$



c) $y = 4x^2 + 4x - 3$



Example 2. A ball is thrown vertically upward from a tower. The height of the ball, h (in metres), above the ground after t seconds is given by the quadratic relation $h = -5t^2 + 20t + 105$.

a) Factor the quadratic relation

b) What is the height of the tower?

c) How long does it take the ball to hit the ground?

c) How long does it take the ball to reach its maximum height?

d) Determine the maximum height of the ball.

e) Make a sketch of the quadratic relation.

Notes: Textbook Pages 282-288

Homework: Textbook Pages 288-291 # 3ab, 4ab, 5ab, 6, 7b, 9, 11, 12