

3.6 Factored Form

Use graphing
technology

Investigate:

Graph the equation and note the location of the x-intercepts,
axis of symmetry and vertex.

Equation	x-int.	axis of symmetry	vertex	sketch
$y = (x - 4)(x + 2)$				
$y = 0.5(x - 5)(x - 1)$				
$y = 2x(x + 4)$				
$y = (x - 2)(x - 7)$				
$y = (x + 4)(x + 4)$				
$y = -3(x + 2)(x + 5)$				

Summary:

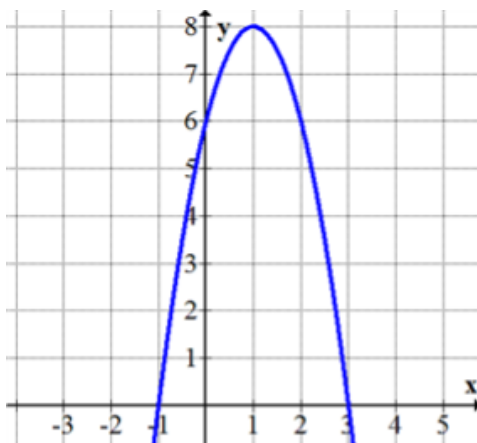
same "a" as
vertex form

$$y = a (x - r) (x - s)$$

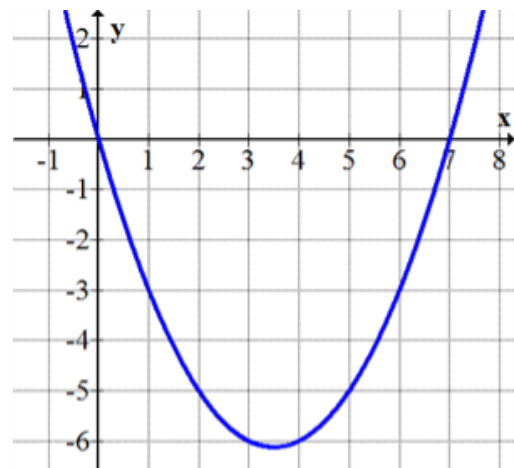
- represents an equation in FACTORED form
- the x-intercepts, or zeros, are r and s
- the axis of symmetry is between the x-intercepts $x = \frac{r+s}{2}$
- the x-coordinate of the vertex is $x = \frac{r+s}{2}$
- find the y-coordinate of the vertex by substituting the x-coordinate of the vertex in the equation

Ex. 1 Determine the equation of the parabola in factored form. Algebraically determine the value of 'a'.

a)

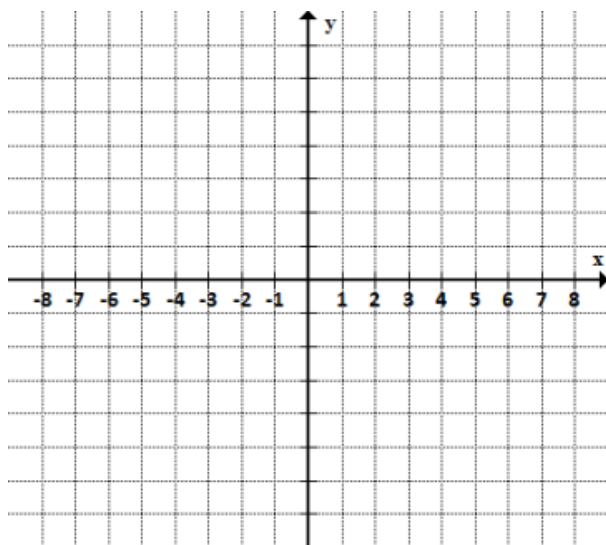


b)

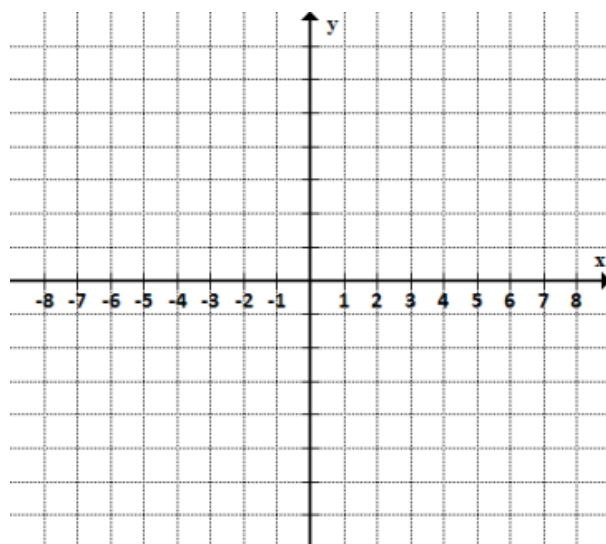


Ex. 2 Sketch each parabola. Label the x-intercepts and the vertex.

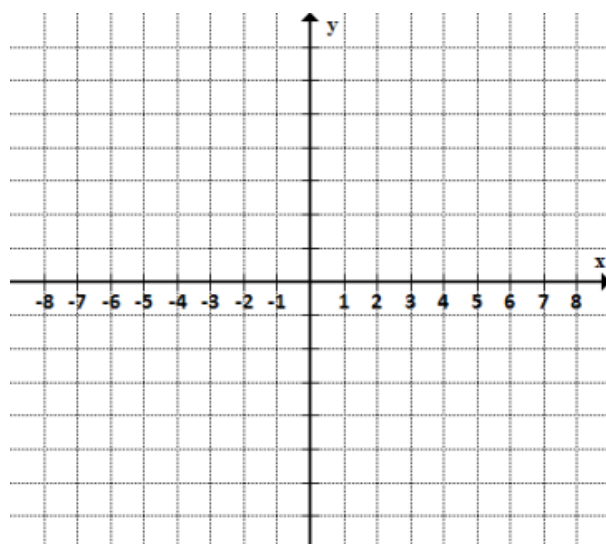
a) $y = (x - 3)(x + 5)$



b) $y = -0.3(x + 2)(x + 5)$

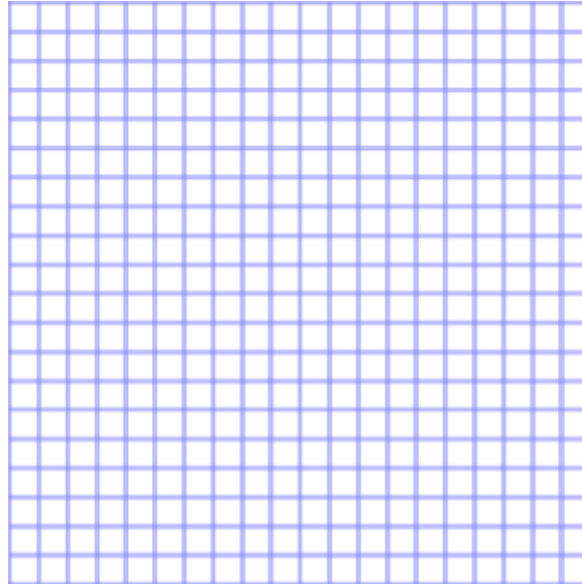


c) $y = -\frac{1}{2}(x - 1)(x + 6)$



Ex. 3 Chris kicked a ball from the ground. It travelled a horizontal distance of 52 m and reached a maximum height of 17 m.

a) Draw a sketch of the relation between horizontal distance and height.



b) Determine the equation of the relation in factored form.

Your Turn:
p. 192 #3,4,5,7,8,10,11

