lulumath

Exploring Quadratic Relations in Factored Form $y = a(x - r)(x - s)$

Video Notes

Video Link

Exploring Quadratic Relations in Factored Form: $y = a(x - r)(x - s)$

Background Information:

- Key Features of Quadratic Relations (Specifically Roots)
- Step Patterns

Look at the graph of $y = 2(x - 1)(x + 3)$. What do the parameters a, r, and s do to the graph?

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

$y = 2(x - 1)(x + 3)$

$a = 2$

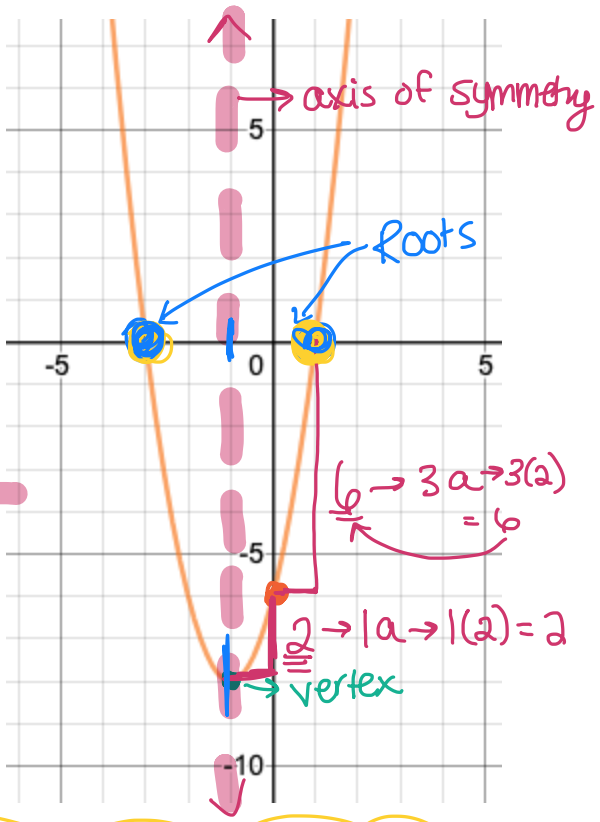
$r = 1$

$s = -3$

In factored form, r and s tell us the roots of the parabola.

Key Features:

- vertex $(-1, -8)$
- Axis of symmetry $x = -1$
- Roots $\{-3, 1\}$
- y-intercept $(0, -6)$



a tells us the vertical stretch/compression (step pattern)

Look at the graph of $y = -\frac{1}{3}x(x-6)$. What do the parameters *a*, *r*, and *s* do to the graph?

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

$y = -\frac{1}{3}x(x-6)$

$(x-0)$

$a = -\frac{1}{3}$ ↔ negative

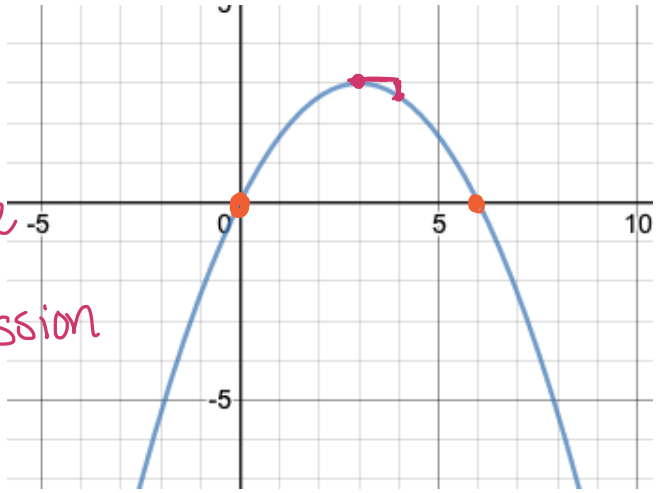
vertical compression

$a = -\frac{1}{3}$

$r = 0$

$s = 6$

} Roots



Look at the graph of $y = x(x - 6)$. What do the parameters *a*, *r*, and *s* do to the graph?

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

$y = 1x(x-6)$

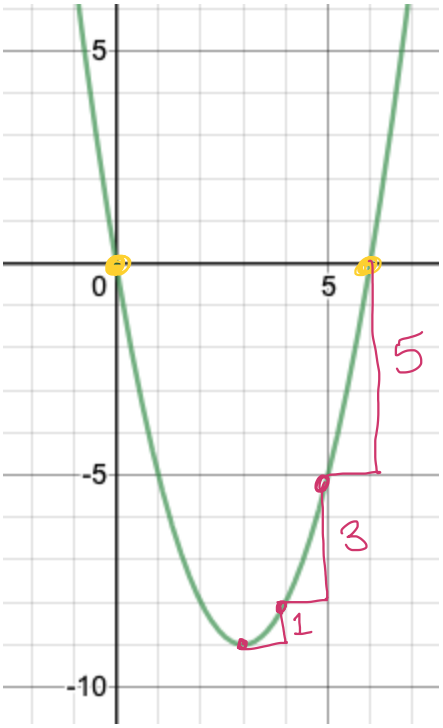
$a = 1$

$r = 0$

$s = 6$

Step Pattern:

1, 3, 5, ...



Summary:

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

FACTORED FORM

Factored form will tell us our roots:

r and s

a will tell us the vertical stretch/compression step pattern