What's Going On?

Checking In

Minds on Desmos!

Action!
What are my zeros?
What is my y-intercept?
What is my vertex?

Consolidation Graph me!

Learning Goal - I will be able to identify the key features of quadratics in factored form.

Minds on

Desmos

Open Desmos and graph each of the equations given below.

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

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

How are the graphs the same?

Same Zeros / x-intercepts

How are the graphs different?

- Second graph is steeper
- y-intercepts different
- vertex different

Minds on

Desmos

Open Desmos and graph each of the equations given below.

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

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

How are the graphs the same?

- same steepness
- same axis of symmetry

How are the graphs different?

- vertex, y-intercept

zeros

Minds on

Desmos

Open Desmos and graph each of the equations given below.

$$y = (x + 5)^2$$

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

How are the graphs the same?

- same steepness
- vertex is on x-axis
- 1 zero/x-intercept

How are the graphs different?

- vertex, x-intercept, y-intercept

Minds on

Desmos

Open Desmos and graph the equation below.

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

Turn on sliders for r and s.

Play with the sliders.

What do the values of r and s represent?

The x-intercepts of the parabola

Action!

What are my zeros / x-intercepts?

$y = (x + 6)(x - 2)$

$x = -6$ $x = +2$

$y = (x + 4)(x + 2)$

$x = -4$ $x = -2$

$y = (x - 5)(x - 1)$

$x = +5$ $x = +1$

Action!

What are my zeros / x-intercepts?

$y = 2(x + 6)(x - 2)$

$x = -6$ $x = 2$

$y = 0.5(x + 4)(x + 2)$

$x = -4$ $x = -2$

$y = -2(x - 5)(x - 1)$

$x = 5$ $x = 1$

Action!

What is my y-intercept?

$y = (x + 6)(x - 2)$

$y = -12$

$y = (x + 4)(x + 2)$

$y = +8$

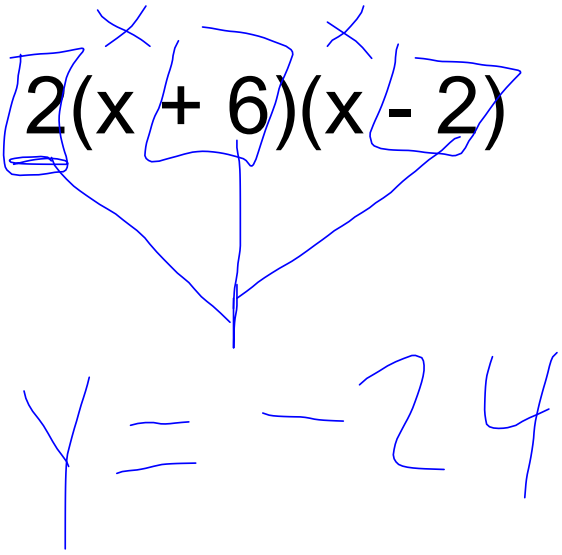
$y = (x - 5)(x - 1)$

$y = +5$

Action!

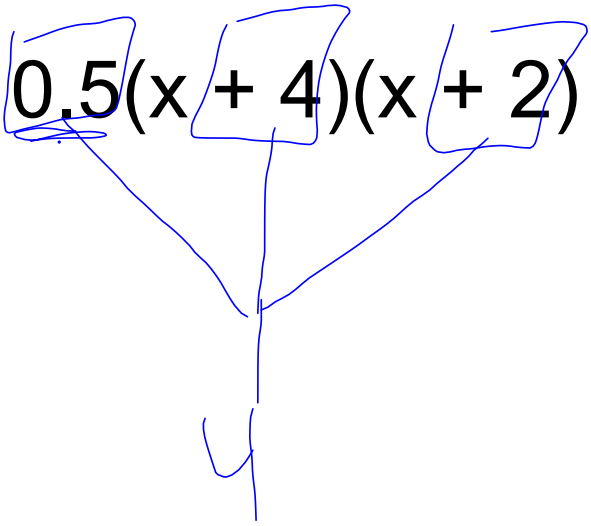
What is my y-intercept?

$y = 2(x + 6)(x - 2)$



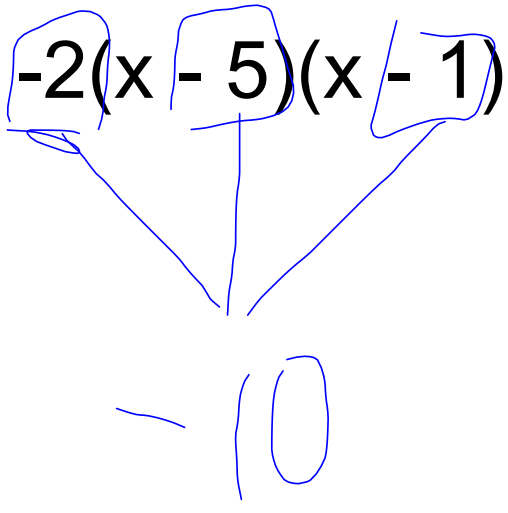
$Y = -24$

$y = 0.5(x + 4)(x + 2)$



4

$y = -2(x - 5)(x - 1)$



-10

Action!

What is my vertex?

$y = (x + 6)(x - 2)$

x-value

zeros: $\frac{-6+2}{2}$

$\frac{-4}{2}$

$= -2$

$y = (-2+6)(-2-2)$

$y = (4)(-4)$

$= -16$

$(-2, -16)$

$y = 2(x + 6)(x - 2)$

$\frac{-6+2}{2} = -2$ x-value

$y = 2(-2+6)(-2-2)$

$y = 2(4)(-4)$

$y = -32$

Vertex $(-2, -32)$

Action!

What is my vertex?

$y = (x - 5)(x - 1)$

$y = (3 - 5)(3 - 1)$

$y = (-2)(2)$

$y = -4$

x-value

$\frac{+5+1}{2} = \frac{6}{2} = 3$

Vertex = (3, -4)

$y = -2(x - 5)(x - 1)$

Consolidation

Graph Me!

To graph a parabola in factored form:

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

1. Plot the zeros / x-intercepts.

They are r **and** s **.**

2. Plot the y-intercept.

It is a **x** r **x** s **!**

***Or expand to standard form (c-value)**

3. Plot the vertex.

The x-value of the vertex is half **way between the zeros.**

Find the y-value by plugging the x-value in and solving.

Consolidation

Graph Me!

Determine the zeros, y-intercept and vertex of the parabola defined by the equation, then graph it!

$$y = (x + 2)(x - 4)$$

Zeros: $x = -2, +4$

y-Intercept: $y = -8$ $(+2)(-4)$

vertex: x-value: $\frac{-2+4}{2} = \frac{2}{2} = 1$

$y = (1+2)(1-4)$

$= (3)(-3)$

$= -9$

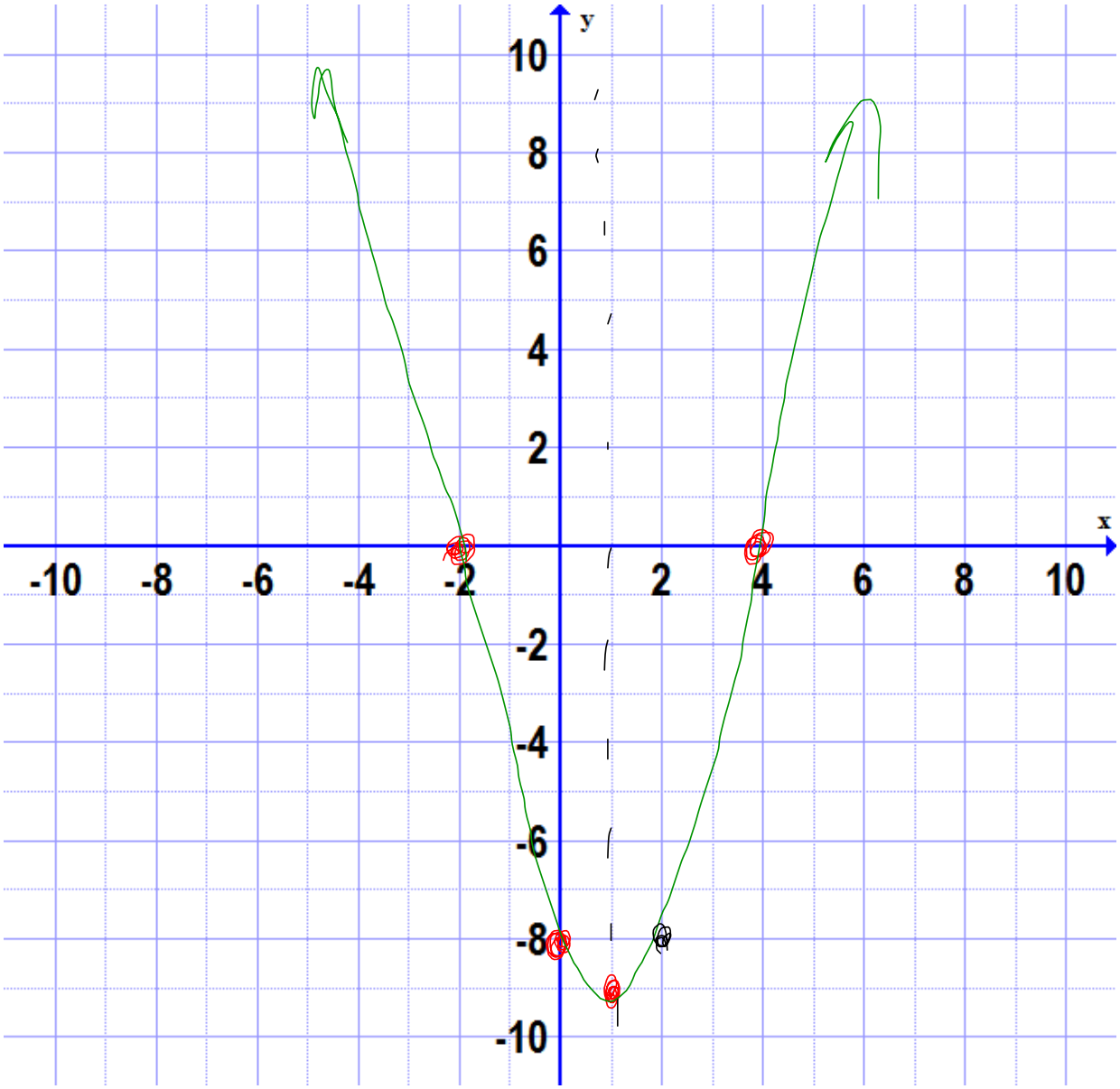
$(1, -9)$

Consolidation

Graph Me!

Graph it!

$$y = (x + 2)(x - 4)$$



Consolidation

Graph Me!

Determine the zeros, y-intercept and vertex of the parabola defined by the equation

$$y = (x - 1)(x - 5)$$

Zeros: $+1, +5$

y-Intercept: $(-1)(-5) = 5$

vertex: $\frac{+1+5}{2} = \frac{6}{2} = 3$ (x)

$y = (3 - 1)(3 - 5)$

$y = (2)(-2)$

$y = -4$

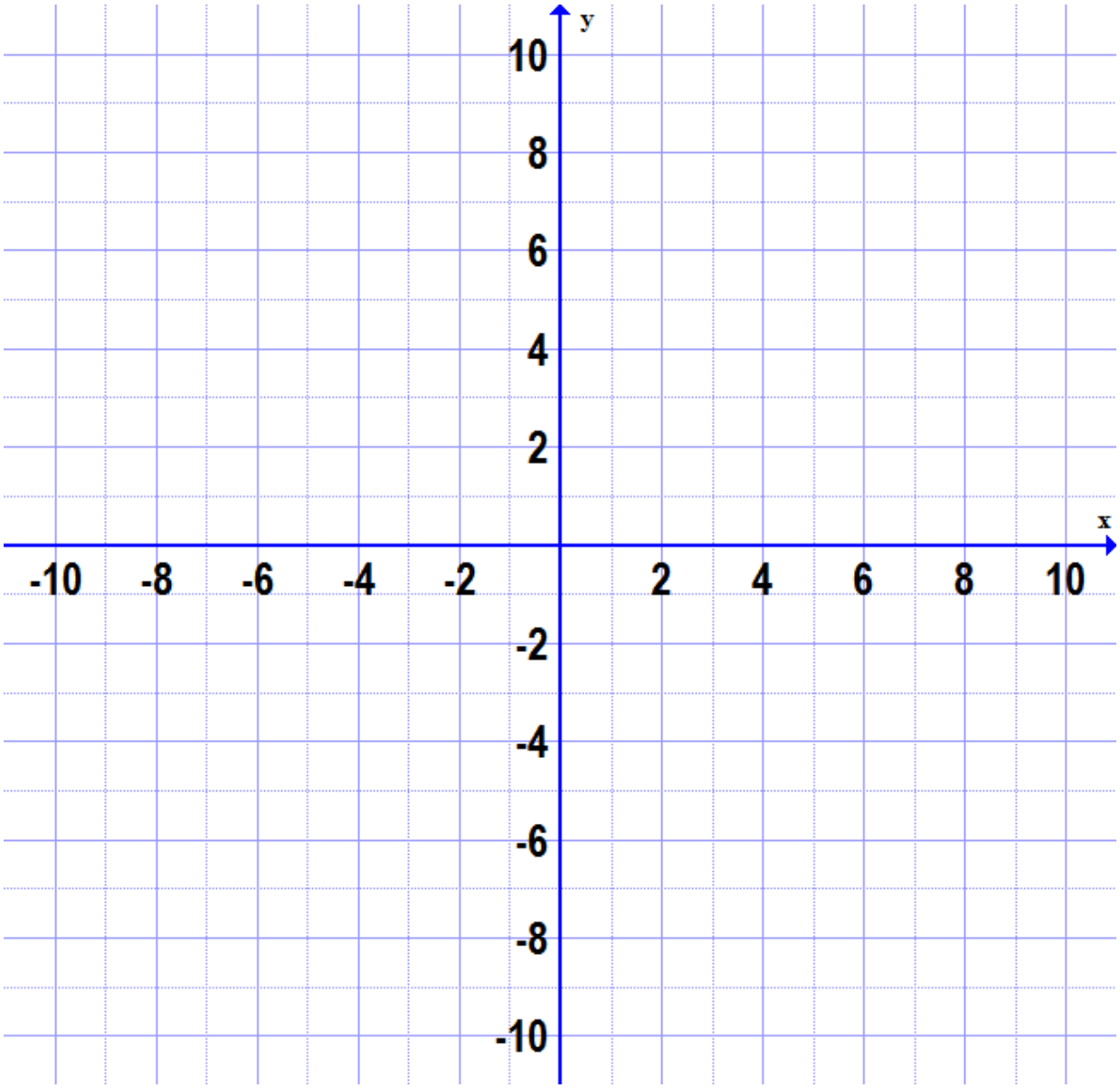
$(3, -4)$

Consolidation

Graph Me!

Graph it!

$$y = (x - 1)(x - 5)$$



Consolidation

Graph Me!

Determine the zeros, y-intercept and vertex of the parabola defined by the equation

$$y = 2(x + 4)(x + 1)$$

Zeros:

y-Intercept:

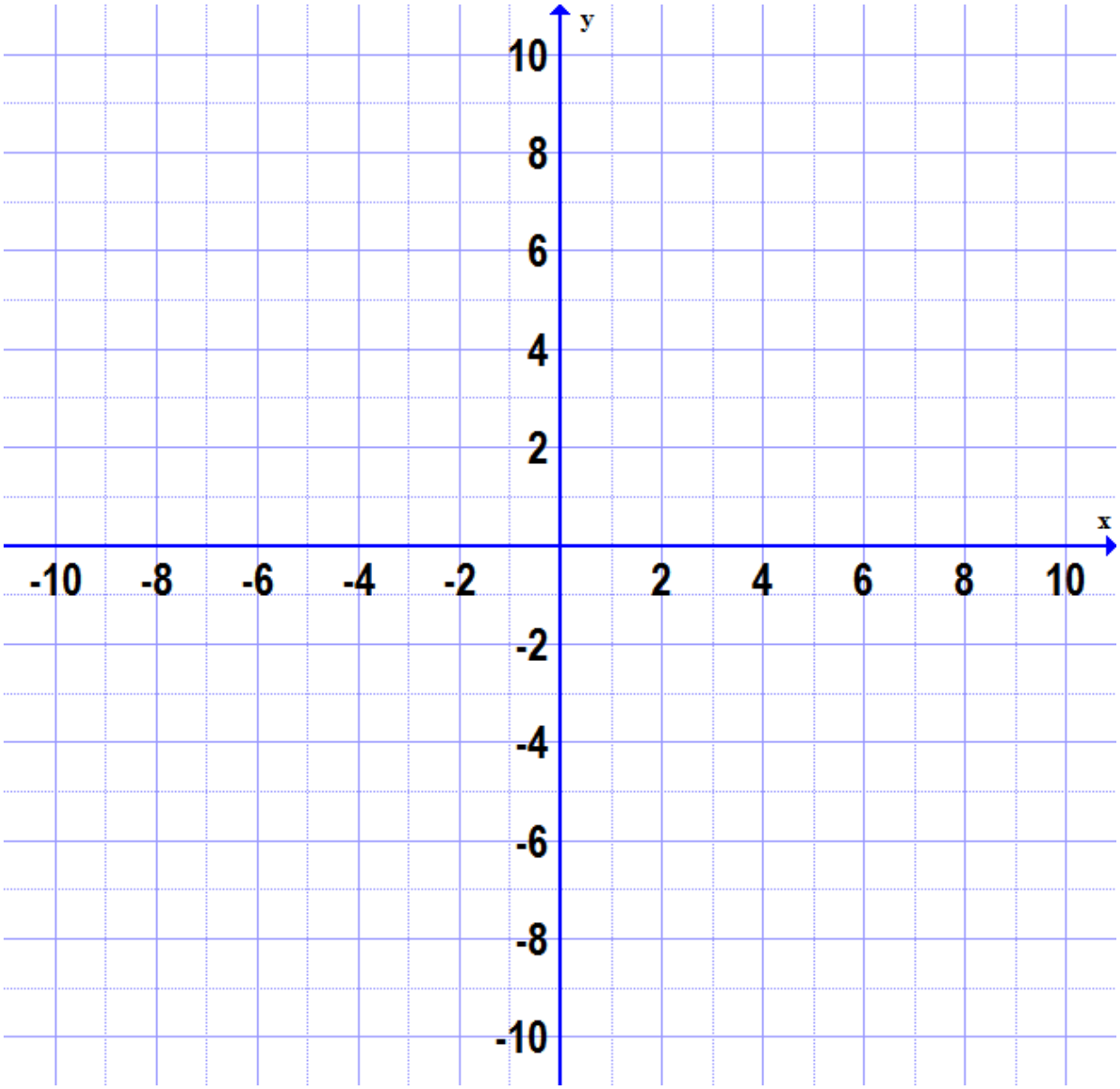
vertex:

Consolidation

Graph Me!

Graph it!

$$y = 2(x + 4)(x + 1)$$



Consolidation

Graph Me!

Determine the zeros, y-intercept and vertex of the parabola defined by the equation

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

Zeros:

y-Intercept:

vertex:

Consolidation

Graph Me!

Graph it!

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