

Partner A: _____

Partner B: _____

Matching Quadratic Functions

Directions: Using the equation bank to help you, write the equation of each of the following graphs in all 3 forms.

1. STRETCH $p+(1,6)$

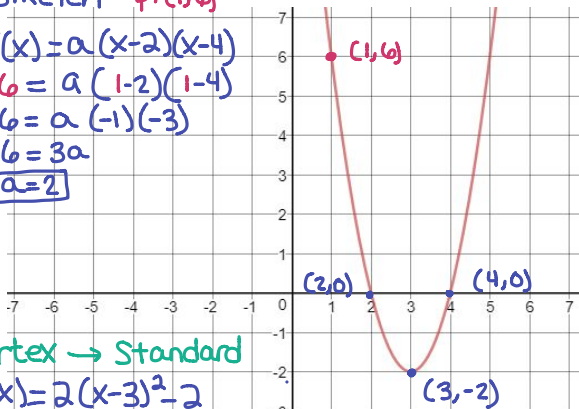
$$f(x) = a(x-2)(x-4)$$

$$6 = a(1-2)(1-4)$$

$$6 = a(-1)(-3)$$

$$6 = 3a$$

$$a = 2$$



Vertex \rightarrow Standard

$$f(x) = 2(x-3)^2 - 2$$

$$f(x) = 2(x-3)(x-3) - 2$$

$$= 2(x^2 - 6x + 9) - 2$$

$$= 2x^2 - 12x + 18 - 2$$

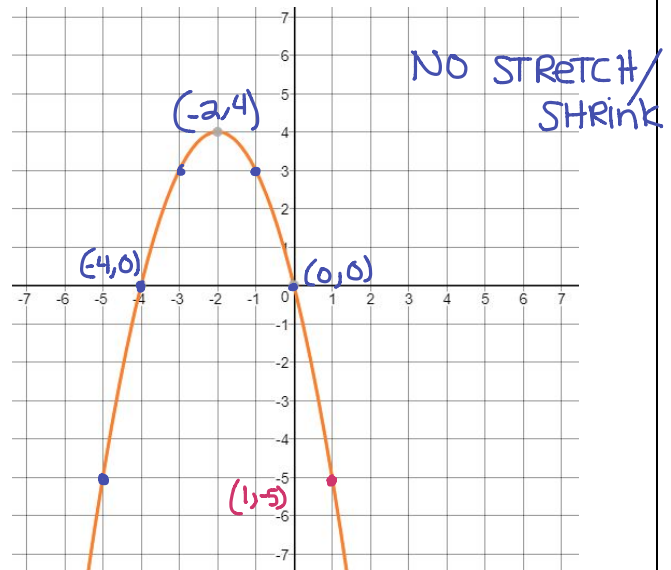
$$= 2x^2 - 12x + 16$$

Vertex Form: $f(x) = 2(x-3)^2 - 2$

Standard Form: $f(x) = 2x^2 - 12x + 16$

Factored Form: $f(x) = 2(x-2)(x-4)$

2.



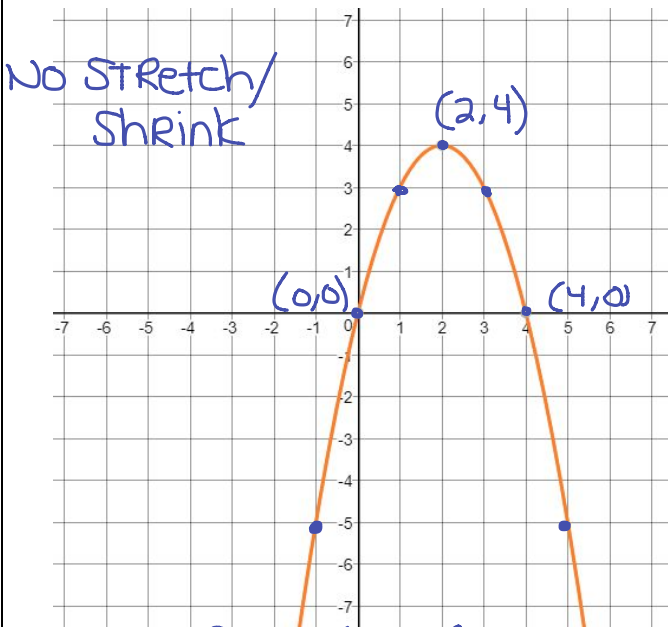
NO STRETCH/
SHRINK

Vertex Form: $f(x) = -(x+2)^2 + 4$

Standard Form: $f(x) = -x^2 - 4x$

Factored Form: $f(x) = -x(x+4)$

3.



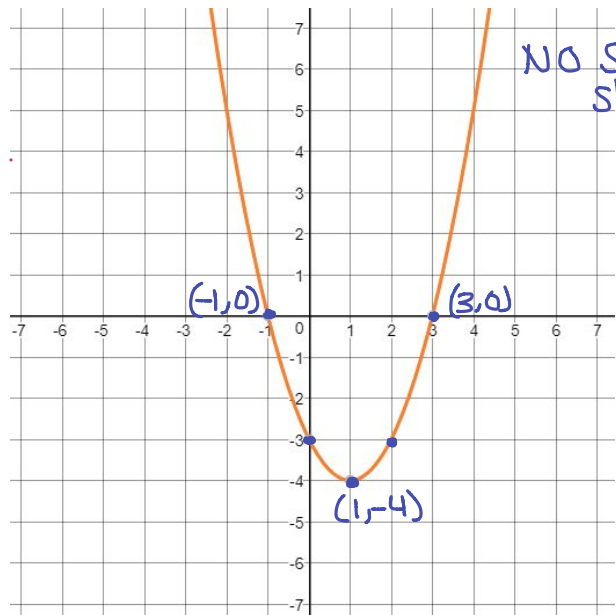
NO STRETCH/
SHRINK

Vertex Form: $f(x) = -(x-2)^2 + 4$

Standard Form: $f(x) = -x^2 + 4x$

Factored Form: $f(x) = -x(x-4)$

4.



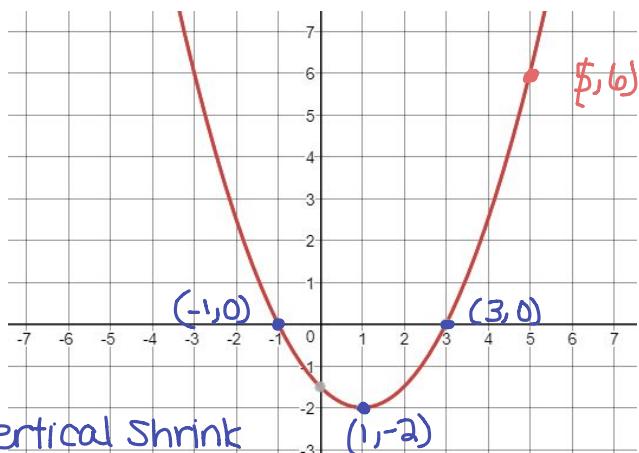
NO stretch/
shrink

Vertex Form: $f(x) = (x-1)^2 - 4$

Standard Form: $f(x) = x^2 - 2x - 3$

Factored Form: $f(x) = (x+1)(x-3)$

5.



Vertical Shrink

$$f(x) = a(x+1)(x-3)$$

$$6 = a(5+1)(5-3)$$

$$6 = a(6)(2)$$

$$6 = 12a$$

$$a = \frac{1}{2}$$

$$\text{Vertex Form: } f(x) = \frac{1}{2}(x-1)^2 - 2$$

$$\text{Standard Form: } f(x) = \frac{1}{2}x^2 - x - \frac{3}{2}$$

$$\text{Factored Form: } f(x) = \frac{1}{2}(x+1)(x-3)$$

vertex \rightarrow Standard

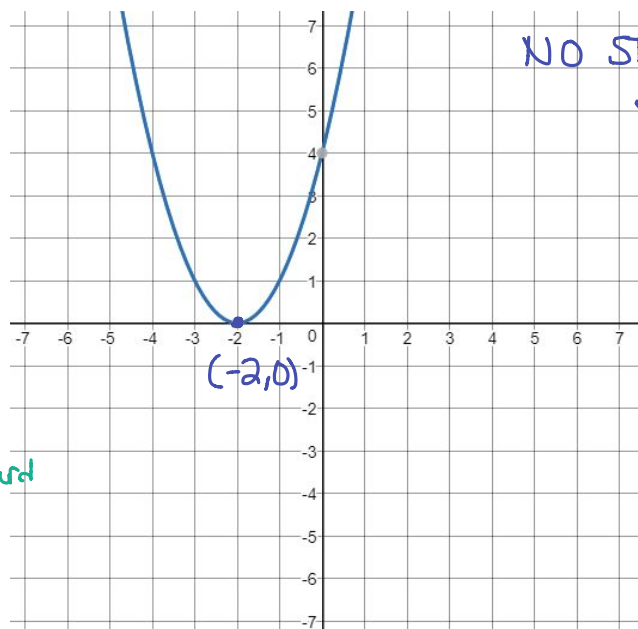
$$f(x) = \frac{1}{2}(x-1)(x-1) - 2$$

$$= \frac{1}{2}(x^2 - 2x + 1) - 2$$

$$= \frac{1}{2}x^2 - x + \frac{1}{2} - 2$$

$$= \frac{1}{2}x^2 - x - \frac{3}{2}$$

6.



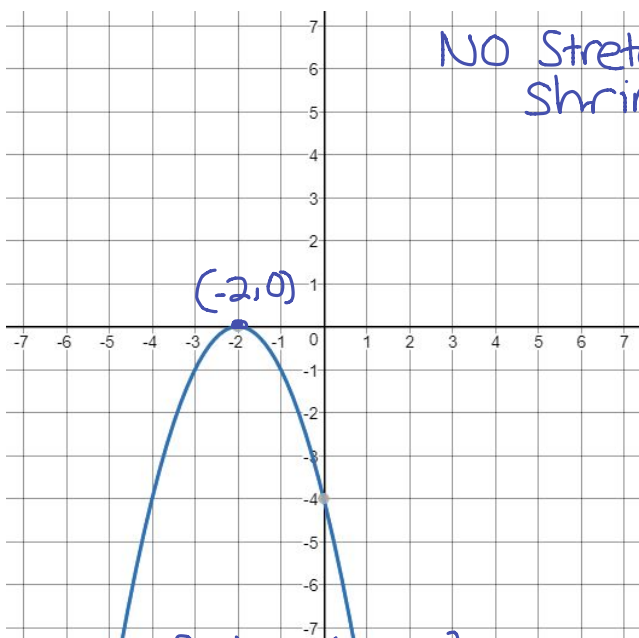
NO stretch/shrink

$$\text{Vertex Form: } f(x) = (x+2)^2$$

$$\text{Standard Form: } f(x) = x^2 + 4x + 4$$

$$\text{Factored Form: } f(x) = (x+2)(x+2)$$

7.



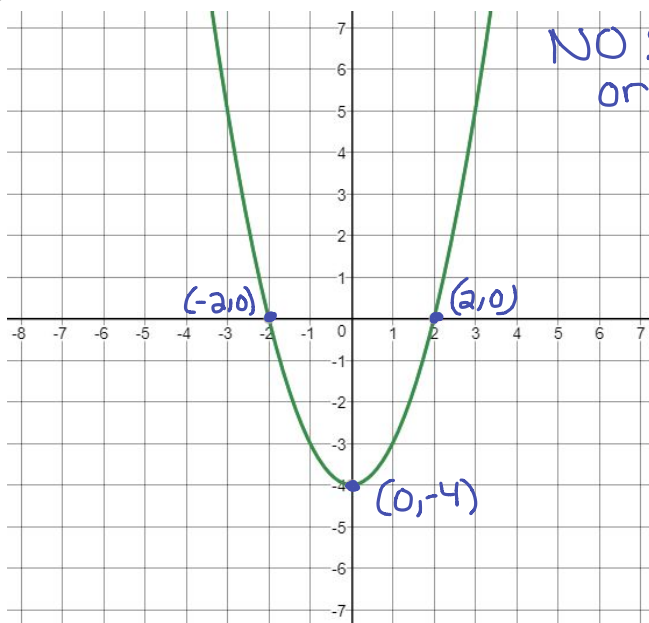
NO stretch/shrink

$$\text{Vertex Form: } f(x) = -(x+2)^2$$

$$\text{Standard Form: } f(x) = -x^2 - 4x - 4$$

$$\text{Factored Form: } f(x) = -(x+2)(x+2)$$

8.



NO stretch or shrink

$$\text{Vertex Form: } f(x) = x^2 - 4$$

$$\text{Standard Form: } f(x) = x^2 - 4$$

$$\text{Factored Form: } f(x) = (x+2)(x-2)$$

Equations

<u>Vertex Form</u>	<u>Standard Form</u>	<u>Factored Form</u>
$y = -(x - 2)^2 + 4$ $y = 2(x - 3)^2 - 2$ $y = -(x + 2)^2$ $y = x^2 - 4$ $y = (x - 1)^2 - 4$ $y = -(x + 2)^2 + 4$ $y = (x + 2)^2$ $y = \frac{1}{2}(x - 1)^2 - 2$	$y = \frac{1}{2}x^2 - 1x - \frac{3}{2}$ $y = x^2 + 4x + 4$ $y = 2x^2 - 12x + 16$ $y = x^2 - 2x - 3$ $y = -x^2 - 4x - 4$ $y = -x^2 - 4x$ $y = x^2 - 4$ $y = -x^2 + 4x$	$y = (x + 2)(x + 2)$ $y = (x + 1)(x - 3)$ $y = 2(x - 2)(x - 4)$ $y = \frac{1}{2}(x + 1)(x - 3)$ $y = -(x + 2)(x + 2)$ $y = -x(x + 4)$ $y = -x(x - 4)$ $y = (x + 2)(x - 2)$

Equations

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