

Bell Work:

$$f(x) = a(x-h)^2 + k$$

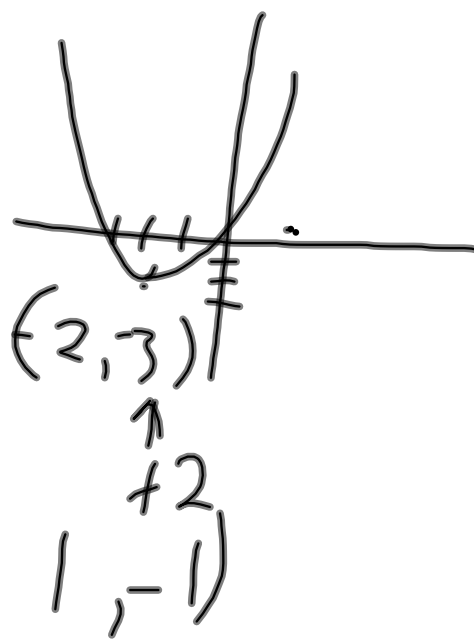
$$f(x) = 2(x+2)^2 - 3$$

Vertex $(-2, -3)$

$$h = -2$$

$$k = -3$$

$$f(x) = 2(x-1)^2 - 1$$



Rules for Transforming Polynomial Funct's

Vertical Translations
(up/down)

Up = Add to the constant

Down = Subtract " "

Horizontal Translation
(Right or Left)

Right = Subtract from the "x" Move Left 2

Left = Add " "

$$y = x^3 + 5$$

Up 3 units

$$y = x^3 + 8$$

$$y = x^3 + 5$$

Move Left 2

$$y = (x + 2)^3 + 5$$

Move Right 3

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

Vertical expansion/compression

Multiply the "X"
by the factor
Compressing < 1 < expanding

$$y = x^3$$

Vertical compression
by a factor of $\frac{1}{2}$

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

Vertical expansion
by a factor of 3

$$y = 3x^3$$

Reflection over
the x-axis
Multiply By -1

$$y = x^3$$

$$y = -x^3$$

$$y = x^3$$

✓ vertically compress $\frac{1}{2}$

✓ reflect over X-axis

✓ translate 3 units right

translate 2 units up

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

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

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

$$y = -\frac{1}{2}(x-3)^3 + 2$$

$$y = ax^3$$

Reflections

X-axis

Y-axis

$$y = -ax^3$$

$$y = a(-x)^3$$

$$\begin{aligned} y &= 3x^3 + 2x^2 \\ &= 3(-x)^3 + 2(-x)^2 \end{aligned}$$

$$y = x^3$$

$$y = 2x^3$$

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

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