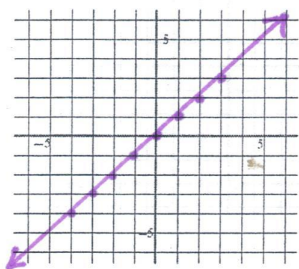


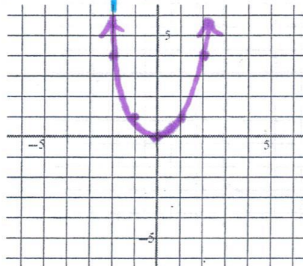
Parent Functions Notes!

$y = x$: line



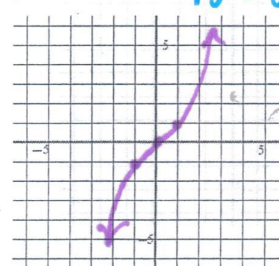
Pattern:
 $\rightarrow 1 \uparrow 1$
 $\rightarrow 2 \uparrow 2$

$y = x^2$: parabola



Pattern:
 $\Rightarrow 1 \uparrow 1$
 $\Rightarrow 2 \uparrow 4$

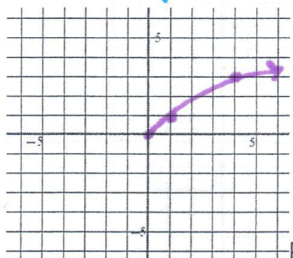
$y = x^3$: "swoopy guy"



stretch: looks like a line
 shrink: flat in the middle

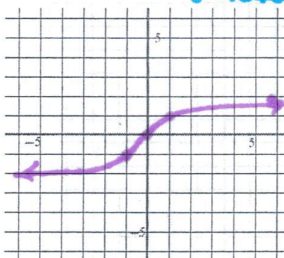
Pattern:
 $\rightarrow 1 \uparrow 1$
 $\leftarrow 1 \downarrow 1$

$y = \sqrt{x}$: 1/2 parabola on its side



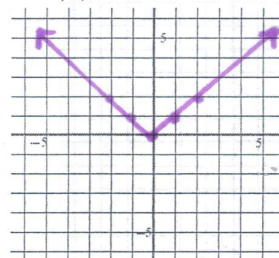
Pattern:
 $\rightarrow 1 \uparrow 1$
 $\rightarrow 4 \uparrow 2$

$y = \sqrt[3]{x}$: "sneaky snake"



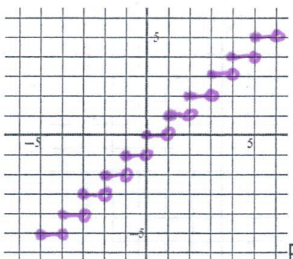
Pattern:
 $\rightarrow 1 \uparrow 1$
 $\leftarrow 1 \downarrow 1$

$y = |x|$: "V"



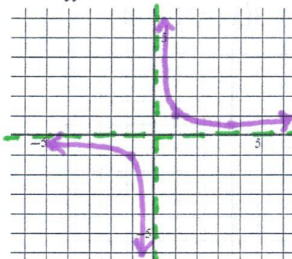
Pattern:
 $\Rightarrow 1 \uparrow 1$
 $\Rightarrow 2 \uparrow 2$

$y = [x]$ "Greatest Integer Function"



Pattern:

$y = \frac{1}{x}$ or x^{-1} "Rational Function"



Pattern:

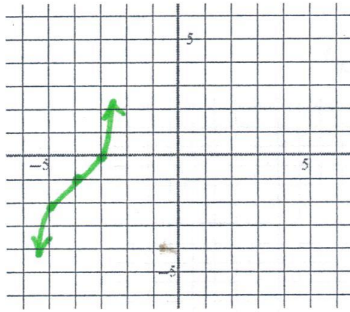
asymptotes!

Using $y = A(x + B)^2 + C$

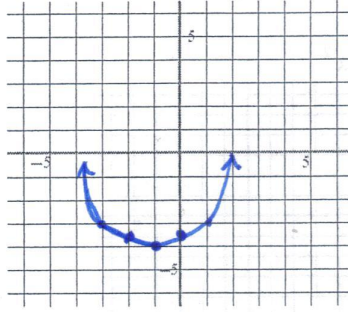
A , B , and C will modify the graph by reflecting, dilating, or translating the function.

- Reflection:
 - If A is negative, it reflects the graph over the x-axis
 - If x is negative, it reflects the graph over the y-axis
- Dilation:
 - If A is a fraction between 0 & 1, it makes the graph shrink vertically (making it FAT)
 - If A is an integer greater than 1, it makes the graph stretch vertically (making it SKINNY)
 - If the coefficient in front of x is an integer greater than 1, it makes the graph shrink horizontally (making it SKINNY)
 - If the coefficient in front of x is a fraction between 0 & 1, it makes the graph stretch horizontally (making it FAT)
- Translations:
 - If C is positive, it shifts the graph UP
 - If C is negative, it shifts the graph DOWN
 - If B is positive, it shifts the graph to the LEFT
 - If B is negative it shifts the graph to the RIGHT

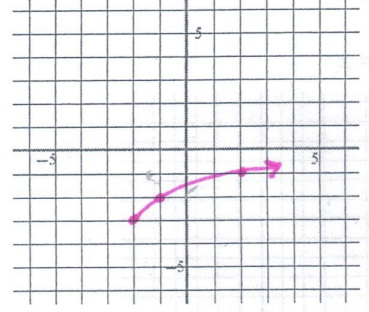
ex: $y = (x+4)^3 - 1$



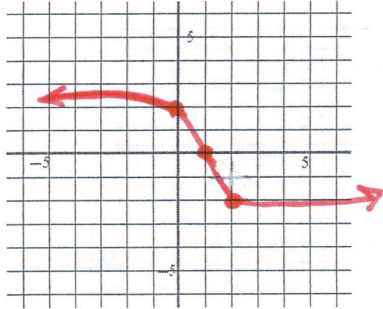
ex: $y = \frac{1}{2}(x+1)^2 - 4$



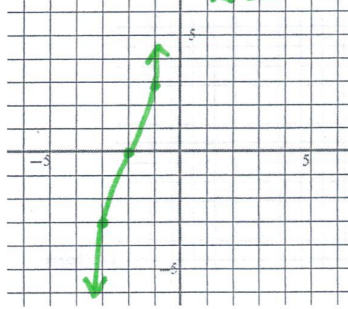
ex: $y = \sqrt{(x+2)} - 3$



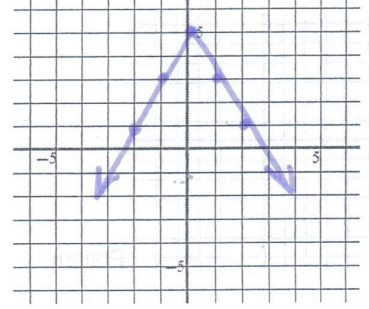
ex: $y = -2\sqrt{(x-1)}$



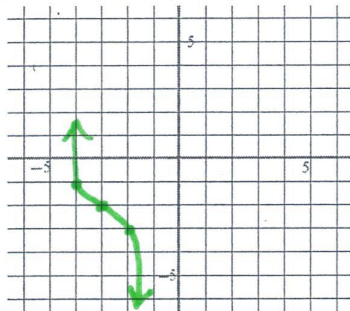
ex: $y = 3(x+2)^3$



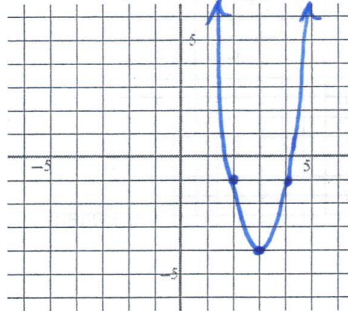
ex: $y = -2|x| + 5$



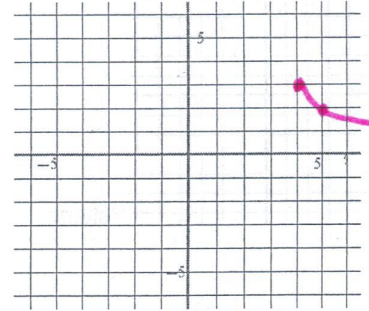
ex: $y = -(x+3)^3 - 2$



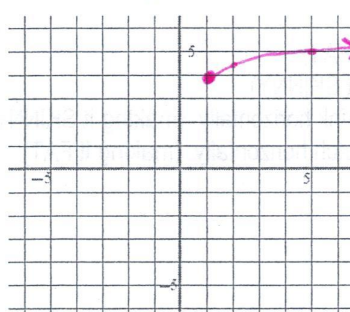
ex: $y = 3(x-3)^2 - 4$



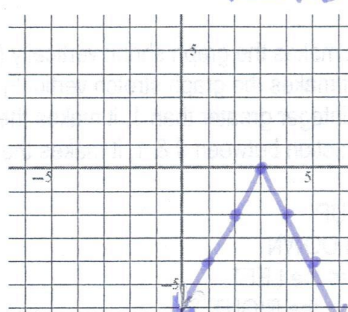
ex: $y = -\sqrt{(x-4)} + 3$



ex: $y = \frac{1}{2}\sqrt{(x-1)} + 4$



ex: $y = -2|x-3|$



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

