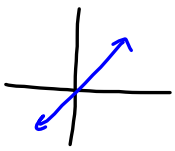
1.6 Transformations of Parent Functions

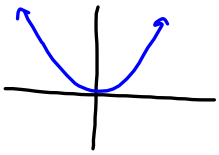
Feb 9

Recall the graphs of the parent functions

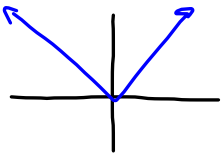
LINEAR $f(x) = x$



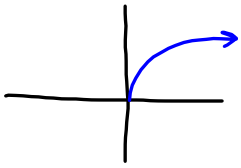
QUADRATIC $f(x) = x^2$



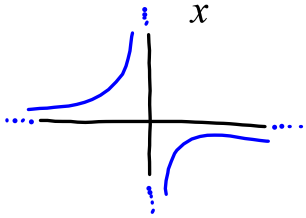
ABSOLUTE VALUE $f(x) = |x|$



SQUARE ROOT $f(x) = \sqrt{x}$



RECIPROCAL $f(x) = \frac{1}{x}$



Transformations of all functions are the same as transformations of quadratics

$$y = a(x-b)^2 + c$$

$x - 3$, $b > 0$

a- VERTICAL STRETCH
$a < 0$, REFLECT IN X-AXIS

b- HORIZONTAL TRANSLATION (SHIFT)
$b > 0 \rightarrow$ RIGHT

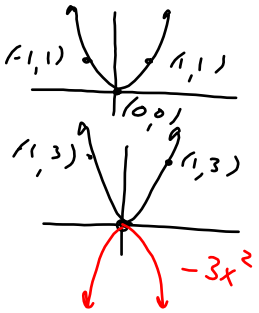
c- VERTICAL TRANSLATION

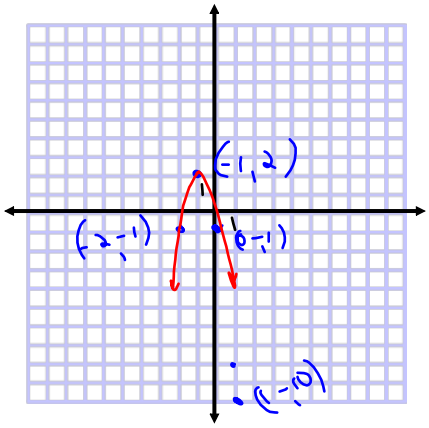
In general, $y = af(x-b) + c$

where f(x) represents the parent function

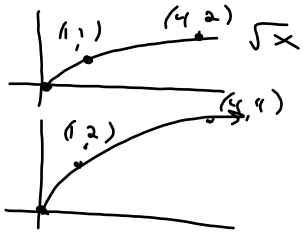
Sketch

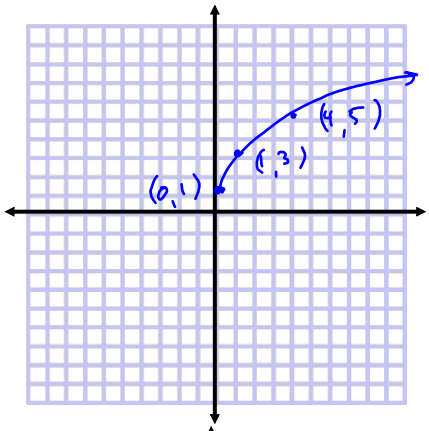
$$f(x) = -3(x+1)^2 + 2$$



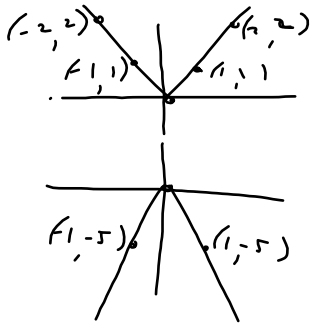


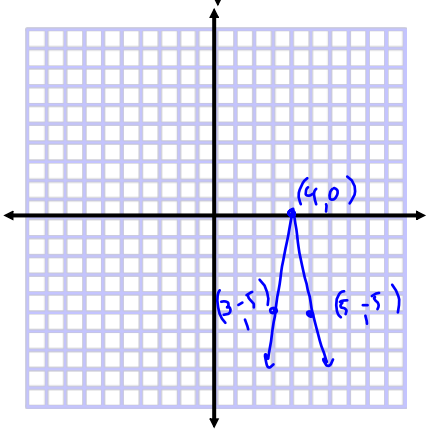
$$f(x) = 2\sqrt{x} + 1$$



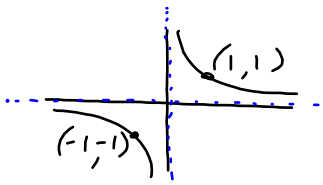


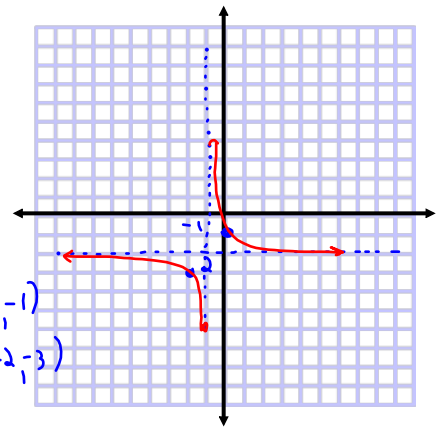
$$f(x) = -5|x-4|$$





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





$(1,1) \to (0,1)$
$\to (0,-1)$
$f(1,-1) \to (-2,-1) \to (-2,-3)$

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