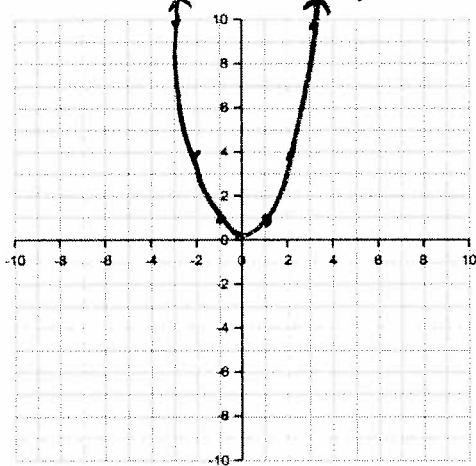
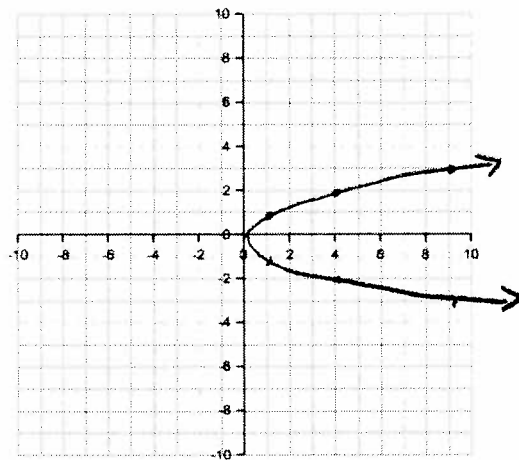


The Square Root Function

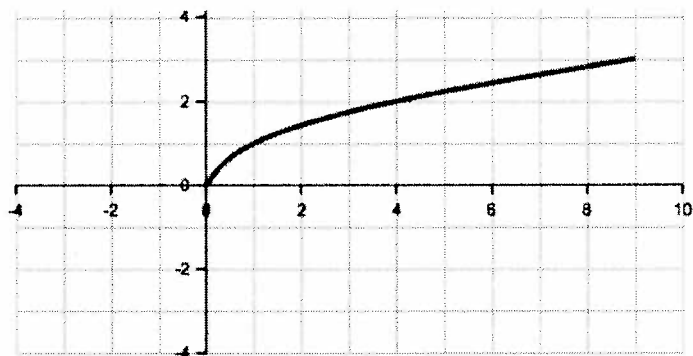
We have the parabola... $y = x^2$



And the *inverse* of the parabola... $y = \sqrt{x}$



Key features of the function $y = \sqrt{x}$:



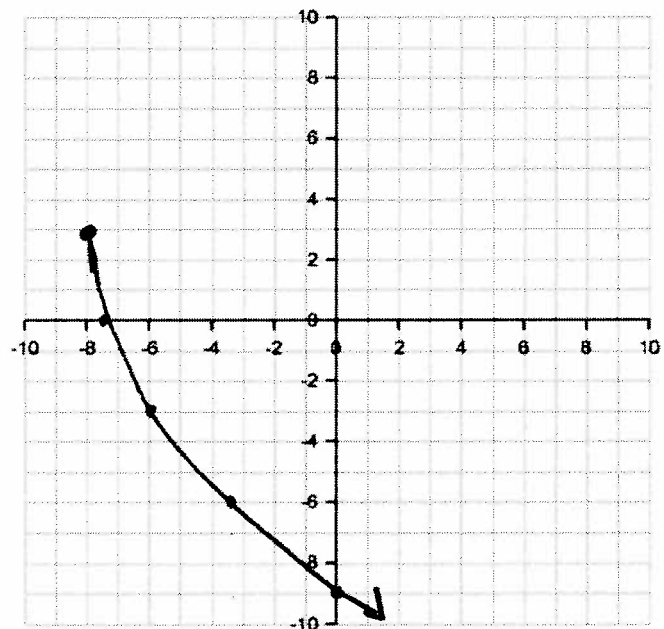
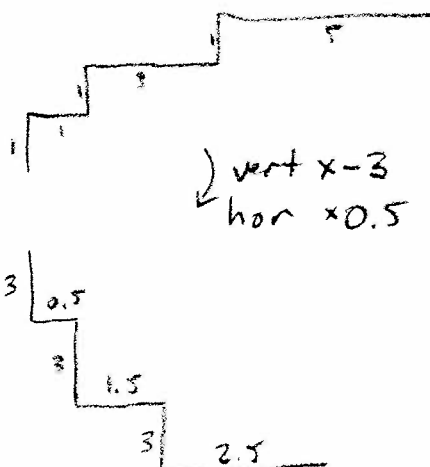
How to graph square root functions:

- Plot the “vertex” of the function just like you would for a parabola
- Figure out how the step pattern will be stretched / flipped according to the equation
- Apply those steps and draw a line through your points

Example:

$$y = -3\sqrt{2(x+8)} + 3$$

$$V(-8, 3)$$

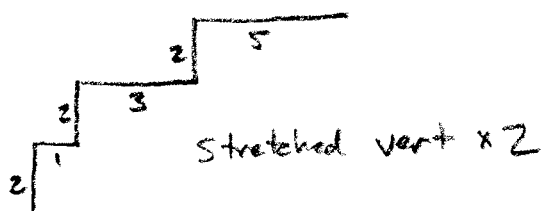


How to determine the equation of a square root function from a graph:

- Find the "vertex" of the function
- Figure out how the step pattern was stretched / flipped
- Figure out what numbers had to appear in the equation to cause those stretches and flips

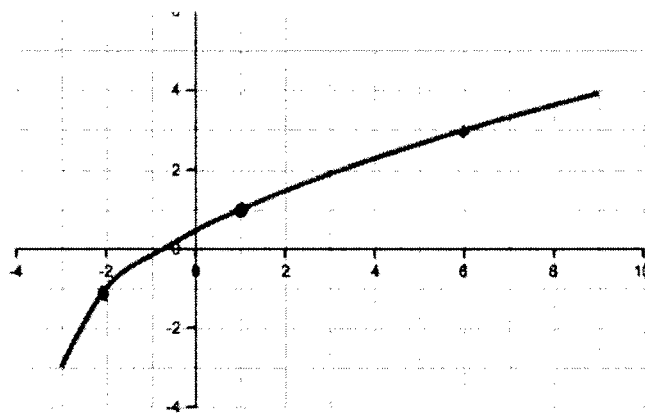
Example 1:

$$V(-3, -3)$$



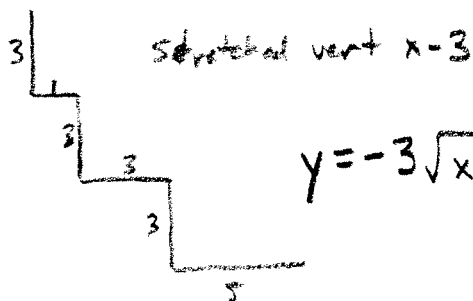
stretched vert $\times 2$

$$y = 2\sqrt{x+3} - 3$$



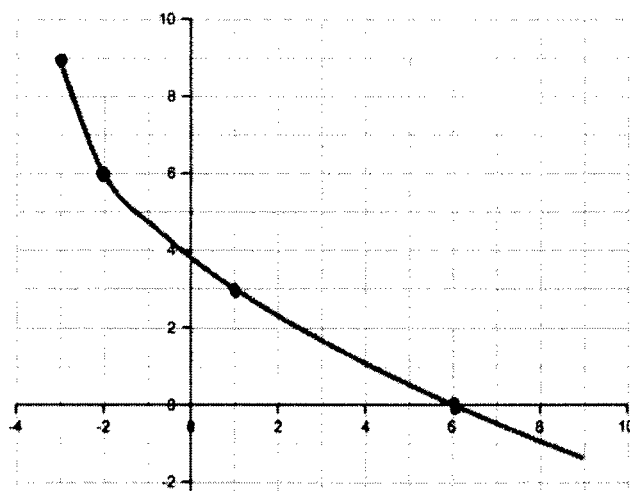
Example 2:

$$V(-3, 9)$$



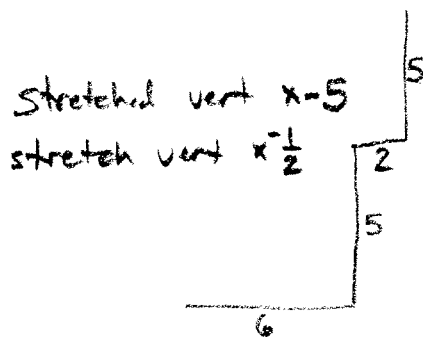
stretched vert $\times -3$

$$y = -3\sqrt{x+3} + 9$$



Example 3:

$$V(7, 9)$$



stretched vert $\times -5$

stretch vert $\times \frac{1}{2}$

$$y = -5\sqrt{\frac{1}{2}(x-7)} + 9$$

