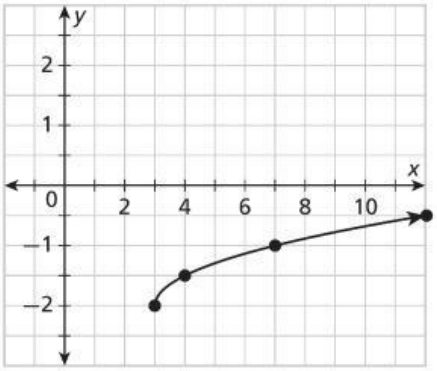
Graph Square Root Functions

The graph of the parent square root function $f(x) = \sqrt{x}$ can be transformed to graph any square root function g. You can use two forms of g. In the form $g(x) = a\sqrt{x - h} + k$, the points $(0, 0)$ and $(1, 1)$ are mapped to (h, k) and $(h + 1, k + a)$, respectively. In the form $g(x) = \sqrt{\frac{1}{b}(x - h)} + k$, the points $(0, 0)$ and $(1, 1)$ are mapped to (h, k) and $(h + b, k + 1)$, respectively.

Complete the steps to sketch the graph of the function $g(x) = \frac{1}{2}\sqrt{x - 3} - 2$.

Rewrite the function *g*.	In the form $g(x) = a\sqrt{x - h} + k$: $g(x) = \square\sqrt{x - \square} + \square$	In the form $g(x) = \sqrt{\frac{1}{b}(x - h)} + k$: $g(x) = \sqrt{\square\left(x - \square\right)} + \square$
Identify the values of the parameters.	$a = \frac{1}{\square}$, $h = \square$, $k = \square$	$b = \square$, $h = \square$, $k = \square$
Map the points (0, 0) and (1, 1) from the graph of *f* to the graph of *g*.	$(0, 0) \rightarrow (3, -2)$ $(1, 1) \rightarrow (3 + \square, -2 + \square)$ $= (\square, \square)$	$(0, 0) \rightarrow (3, -2)$ $(1, 1) \rightarrow (3 + \square, -2 + \square)$ $= (\square, \square)$
Find two more points.	$g(7) = \frac{1}{2}\sqrt{7 - 3} - 2 = \square$, $g(12) = \frac{1}{2}\sqrt{12 - 3} - 2 = \square$	$g(4) = \frac{1}{2}\sqrt{4 - 3} - 2 = \square$, $g(12) = \frac{1}{2}\sqrt{12 - 3} - 2 = \square$
Sketch the graph.	Use the above points. Draw a smooth curve through the points.	

1. Sketch the graph of $g(x) = 2\sqrt{x + 4} + 5$. Show your work.

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