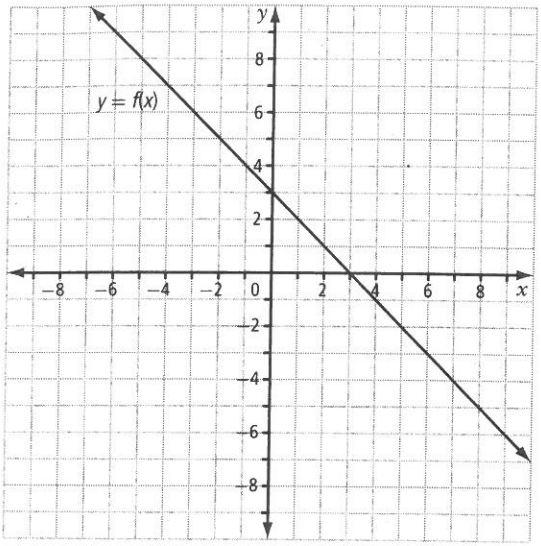
Working Example 3: Graph the Square Root for a Function From the Graph of the Function

Given the graph of $y = f(x)$, sketch the graph of $y = \sqrt{f(x)}$.



When graphing the square root of a function, what is the significance of the points where $f(x) = 0$ and $f(x) = 1$?

Solution

Create a table of values using the graph of the function.

- First consider the invariant points on $y = f(x)$. Add these to the table.
- Locate any key points on $f(x)$ that are greater than $y = 1$. Add these values to your table.
- Complete the third column of the table by taking the square root of the y-values.

x	y	$\sqrt{y}$

On the same grid as the graph of $y = f(x)$ above,

- plot the invariant points of $y = f(x)$
- draw a smooth curve between the invariant points, and above the graph of $f(x)$
- plot $\sqrt{y}$ for the key points you identified in your table of values, and draw a smooth curve between these points

To see a similar question, refer to Example 3 on pages 84–85 in *Pre-Calculus 12*.