

Square Root Functions

Name: _____

Date: _____

Concepts

- Finding the Rule of a Square Root Function
- Graphing a Square Root Function
- Solving Problems Involving the Square Root Function
- The Inverse of the Square Root Function
- The Properties of the Square Root Function
- The Role of the Parameters in the Square Root Function (theory)
- The Square Root Function

Finding the Rule of a Square Root Function

1. The curve of a square root function starts at the point $(1, -2)$, opens toward the right, and passes through $(10, 4)$.

a) Find its rule in the form $f(x) = a\sqrt{x-h} + k$.

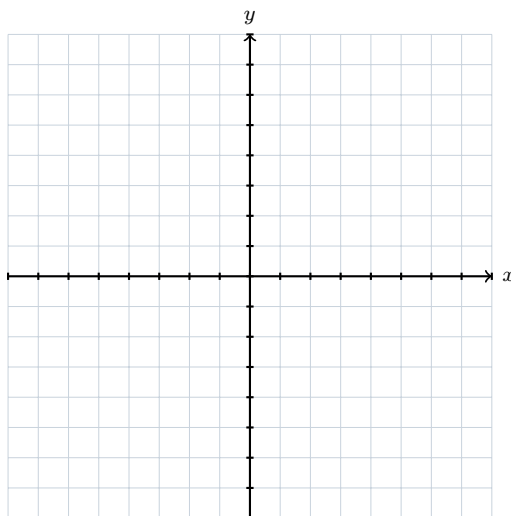
b) Give the domain and the range of f .

c) Find the zero of f .

Graphing a Square Root Function

2. Consider $f(x) = -3\sqrt{x-2} + 6$.

- Give the coordinates of the starting point of the curve, the domain and the range.
- Compute $f(2)$, $f(3)$ and $f(6)$, then use these three points to sketch the curve.
- State the zero of f and say whether f is increasing or decreasing.



Solving Problems Involving the Square Root Function

3. A construction hoist rises along a mast. The time needed to reach a height of h metres is $t(h) = 2\sqrt{h+4} - 4$ seconds.

- How long does the hoist take to reach 21 m?
- What height has it reached after 8 s?

The Inverse of the Square Root Function

4. Let $f(x) = -2\sqrt{x+1} + 5$. Find the rule of f^{-1} , together with its domain and its range.

The Properties of the Square Root Function

5. Let $f(x) = -2\sqrt{x-1} + 6$. Give the coordinates of the starting point, the domain, the range, the direction of variation, the zero, and the intervals where f is positive and where it is negative.

The Role of the Parameters in the Square Root Function

6. Let $f(x) = -4\sqrt{-2(x-5)} + 7$. Give the coordinates of the endpoint of the curve, the domain, the range, and state in which direction (left/right, up/down) the branch leaves the endpoint. Support the direction with one computed point.

The Square Root Function

7. Let $f(x) = 3\sqrt{x-1} - 6$.

- a) Give the domain and the range.
- b) Find the zero of f .
- c) Does the graph have a y -intercept? Justify.

Want the harder problems and the worked solutions?

The *Challenge Problems* set and the *Answer Keys* for Square Root Functions — with the reasoning written out in full — are available at tutorinmontreal.ca.