LESSON MAKER PRO

Radical Graph Clues

Sketch curves and read what their points reveal.

HIGH SCHOOL · A2.F.1.7

A2.F.1.7 "Graph a radical function (square root and cube root only). Identify the domain, range, and x- and y-intercepts using various methods and tools that may include a graphing calculator or other appropriate technology."

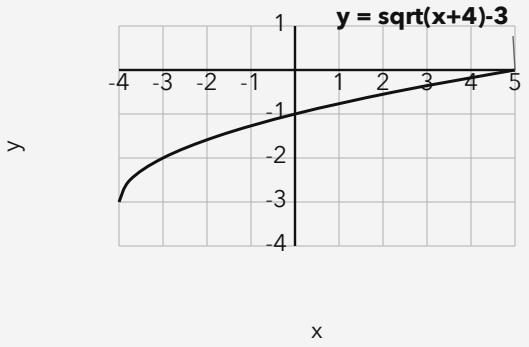
NAME _____ DATE _____

START, THEN TRACE

For a square-root graph, begin where the expression inside sqrt equals 0, then trace the curve in the direction it continues. A cube-root graph extends in both directions. To find intercepts, look where the graph crosses an axis or set y = 0 or x = 0.

WORKED EXAMPLE

Use the graph to find the domain, range, and both intercepts.



1. The curve starts at (-4,-3).
2. It continues right and up, so x >= -4 and y >= -3.
3. It meets the x-axis at (5,0) and the y-axis at (0,-1).

Answer: Domain: x >= -4; range: y >= -3; x-intercept: (5,0); y-intercept: (0,-1).

PRACTICE 4 problems

1 Sketch y = sqrt(x-2)+1. Give its domain and range.

ANSWER _____

2 Sketch y = -sqrt(x+1)+2. Find both intercepts.

ANSWER _____

3 Sketch y = cbrt(x)-2. Give its domain and range.

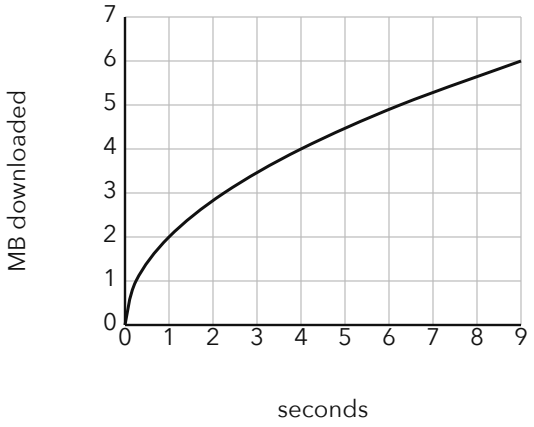
ANSWER _____

4 Sketch y = cbrt(x-1)+1. Find both intercepts.

ANSWER _____

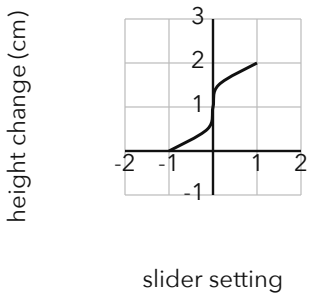
APPLY IT Show your work

1 This graph tracks a download until it stops. Find its domain, range, and both intercepts.



ANSWER _____

2 A game slider changes an avatar's height. Find the graph's domain, range, and both intercepts.



ANSWER _____

CHALLENGE One step up

A square-root graph starts at (2,3), passes through (6,1), and continues down to the right. Find a in y = a sqrt(x-2)+3. Then give the domain, range, and both intercepts.

WORK SPACE AND ANSWER

ANSWER KEY

Radical Graph Clues

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Sketch y = sqrt(x-2)+1. Give its domain and range.	**Curve starts at (2,1) and passes through (3,2) and (6,3). Domain: x >= 2; range: y >= 1.**
2	Sketch y = -sqrt(x+1)+2. Find both intercepts.	**Curve starts at (-1,2) and passes through (0,1) and (3,0). x-intercept: (3,0); y-intercept: (0,1).**
3	Sketch y = cbrt(x)-2. Give its domain and range.	**Increasing curve through (-1,-3), (0,-2), and (1,-1). Domain and range: all real numbers.**
4	Sketch y = cbrt(x-1)+1. Find both intercepts.	**Increasing curve through (0,0), (1,1), and (2,2). Both intercepts: (0,0).**

PART 2 · APPLY IT

1. **Domain: 0 <= x <= 9; range: 0 <= y <= 6; both intercepts: (0,0).** The curve runs from (0,0) to (9,6). It meets both axes at its starting point.
2. **Domain: -1 <= x <= 1; range: 0 <= y <= 2; x-intercept: (-1,0); y-intercept: (0,1).** Read the domain and range from the curve's endpoints. Read each intercept where the curve meets an axis.

CHALLENGE

a = -1; domain: x >= 2; range: y <= 3; x-intercept: (11,0); no y-intercept.

Accept interval notation for domains and ranges. For sketches, accept the correct shape through the listed points.