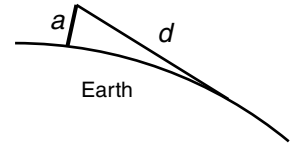


LESSON
8-7

Problem Solving
Radical Functions

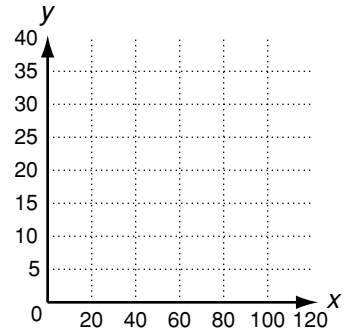
On Earth the distance, d , in kilometers that one can see to the horizon is a function of altitude, a , in meters, and can be found using the function $d(a) = 3.56\sqrt{a}$. To find the corresponding distance to the horizon on Mars, the function must be stretched horizontally by a factor of about $\frac{9}{5}$.



1. a. Write the function that corresponds to the given transformation.

$$d(a) = 3.56 \sqrt{\frac{5}{9}(a)}$$

- b. Use a graphing calculator to graph the function and the parent function. Sketch both curves on the coordinate plane.
- c. Use your graph to determine the approximate distance to the horizon from an altitude of 100 meters:
on Earth _____
on Mars _____



Choose the letter for the best answer.

2. Which equation represents the radius of a sphere as a function of the volume of the sphere?

A $r = \sqrt[3]{\frac{3\pi}{4V}}$

B $r = \sqrt[3]{\frac{3V}{4\pi}}$

C $r = \sqrt[3]{\frac{4\pi}{3V}}$

4. The side length of a cube can be represented by $s = \sqrt{\frac{T}{6}}$, where T is the surface area of the cube. What transformation is shown by $s = \sqrt{\frac{T}{3}}$?

- A Horizontal compression by a factor of 0.5
B Horizontal stretch by a factor of 2
C Vertical compression by a factor of 0.5

3. Harry made a symmetrical design by graphing four functions, one in each quadrant. The graph of which function is in the third quadrant?

A $f(x) = 4\sqrt{x}$

B $f(x) = -4\sqrt{x}$

C $f(x) = -4\sqrt{-x}$

5. The hypotenuse of a right isosceles triangle can be written $H = \sqrt{2x^2}$, where x is the length of one of the legs. Which function models the hypotenuse when the legs are lengthened by a factor of 2?

A $H = \sqrt{2x^2} + 4$

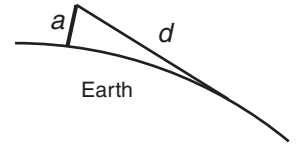
B $H = \sqrt{4x^2}$

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LESSON
8-7

Problem Solving
Radical Functions

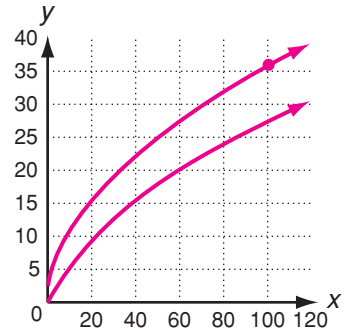
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- b. Use a graphing calculator to graph the function and the parent function. Sketch both curves on the coordinate plane.
- c. Use your graph to determine the approximate distance to the horizon from an altitude of 100 meters:
 on Earth 36 km
 on Mars 27 km



Choose the letter for the best answer.

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B $H = \sqrt{4x^2}$

C $H = \sqrt{8x^2}$