

Radical Functions II (2.1)

p72

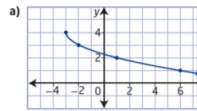
day 2

# Quiz 2

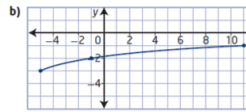
10. For each graph, write the equation of a radical function of the form  $y = a\sqrt{b(x-h)} + k$ .

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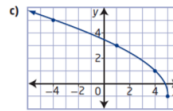
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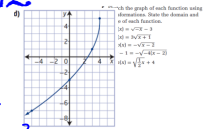
3, 10bcd, 12



$$y = \sqrt{\frac{1}{4}(x+5)} - 3$$



$$y = \frac{1}{2}\sqrt{x+5} - 3$$



12. Approximate use radical functions to model and optimize crop production. One factor that agronomists use to know the amount of nitrogen fertilizer applied affects the crop yield. Suppose the function  $T(x) = 100\sqrt{0.0001x + 0.0001}$  is used to predict the yield,  $T$ , in kilograms per hectare, of corn as a function of the amount,  $x$ , in kilograms per hectare, of nitrogen applied to the crop.

a) Use the language of transformations to compare the graph of this function to the graph of  $f(x) = \sqrt{x}$ .

b) Graph the function using transformations.

c) Identify the domain and range.

d) What do the shape of the graph, the domain, and the range tell you about this situation? Are the domain and range realistic in this context? Explain.

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ex1: Write the equation of the radical function that starts at  $(-3, -2)$  and passes through  $(6, 0)$ . (x, y)

h k

don't use both a and b. just one

$$y = a\sqrt{b(x-h)} + k$$

$$y = a\sqrt{x-h} + k$$

$$y = \frac{2}{3}\sqrt{x+3} - 2$$

$$0 = a\sqrt{6+3} - 2$$

$$2 = a\sqrt{9}$$

$$2 = 3a$$

$$\frac{2}{3} = a$$

16

16.6

$$y = \sqrt{b(x-h)} + k$$

$$0 = \sqrt{b(-6-3)} - 2$$

$$2 = \sqrt{-9b}$$

$$4 = -9b$$

$$-\frac{4}{9} = b$$

$$y = \sqrt{-\frac{4}{9}(x-3)} - 2$$

$$0 = a\sqrt{-6-3} - 2$$

$$2 = a\sqrt{-9}$$

ignore

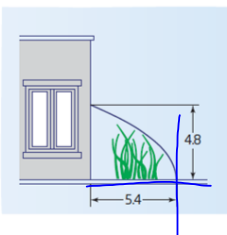
$$2 = a\sqrt{9}$$

$$\frac{2}{3} = a$$

$$y = \frac{2}{3}\sqrt{-(x-3)} - 2$$

$-(x-3)$   $3-x$

5. While meeting with a client, a manufacturer of custom greenhouses sketches a greenhouse in the shape of the graph of a radical function. What equation could the manufacturer use to represent the shape of the greenhouse roof?



(x, y)

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h ref (0,0)

$$y = a\sqrt{x-0} + 0$$

$$4.8 = a\sqrt{5.4}$$

$$\frac{4.8}{\sqrt{5.4}} = a$$

$$2.1 = a$$

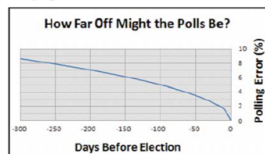
$$y = 2.1\sqrt{x}$$

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14. During election campaigns, campaign managers use surveys and polls to make projections about the election results. One campaign manager uses a radical function to model the possible error in polling predictions as a function of the number of days until the election, as shown in the graph.



- Explain what the graph shows about the accuracy of polls before elections.
- Determine an equation to represent the function. Show how you developed your answer.
- Describe the transformations that the function represents as compared to  $y = \sqrt{x}$ .

$$5 = a\sqrt{-100x}$$

$$5 = 10a$$

$$\frac{1}{2} = a$$

$$y = \frac{1}{2}\sqrt{-x}$$

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#w: p72#7, 11ac, 19b

$$A(r) = \pi r^2$$

$$r = \sqrt{\frac{A}{\pi}}$$

$$= \sqrt{\frac{1}{\pi} A}$$