

Solving Radical Equations II (2.3)

p76 day 6

Enneagram 2

Loves to take care of others  
Very helpful  
Core longing: feeling loved  
Core fear: being unworthy  
Deadly sin: pride

Does not know how to say no  
Puts their own needs last  
mom & weekend

Great listeners  
Expect others to know what they need

6. Solve each equation algebraically. What are the restrictions on the variables?

- a)  $\sqrt{5x^2 + 11} = (x + 5)^2$   
b)  $x + 3 = \sqrt{2x^2 - 7}$   
c)  $\sqrt{13 - 4x^2} = 2 - x$   
d)  $x + \sqrt{-2x^2 + 9} = 3$

3)

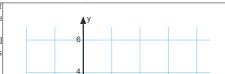
p76 day 6  
c, 8ac, 10

$$y = \sqrt{5x^2 + 11} - x - 5$$

$$\begin{aligned} 5x^2 + 11 &= x^2 + 10x + 25 \\ 4x^2 - 10x - 14 &= 0 \quad \div 2 \\ 2x^2 - 5x - 7 &= 0 \quad m = -14, a = -7, b = 2 \\ 2x^2 + 2x - 7x - 7 &= 0 \\ 2x(x+1) - 7(x+1) &= 0 \\ (2x-7)(x+1) &= 0 \\ \boxed{x = \frac{7}{2}} \quad \boxed{x = -1} \end{aligned}$$

COMC reg

10. Two researchers, Greg and Yolanda, use the function  $N(t) = 1.3\sqrt{t} + 4.2$  to model the number of people that might be affected by a certain medical condition in a region of 7.4 million people. In the function,  $N$  represents the number of people, in millions, affected by the condition. Predict that it would correct? Just



8. Determine, graphically, the approximate value(s) of  $a$  in each formula if  $b = 6.2$ ,  $c = 9.7$ , and  $d = -12.9$ . Express answers the nearest hundredth.

- a)  $c = \sqrt{ab} - d$   
b)  $d + 7\sqrt{a + c} = b$   
c)  $c = b - \sqrt{a^2 + d}$   
d)  $\sqrt{2a^2 + c} + d = a - b$

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ex1: state the restrictions on the variable

$$\sqrt{3x-5} = x-5$$

$$\sqrt{x+5} = x+3$$

$$\begin{aligned} 3x-5 &\geq 0 & x-5 &\geq 0 \\ 3x &\geq 5 & x &\geq 5 \\ x &\geq \frac{5}{3} & & \end{aligned}$$

use the larger number

$$\boxed{x \geq 5}$$

$$\sqrt{3x^2-5} = x+4$$

5ac  
restr. only

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ex2: The speed of water flowing out of a hole near the bottom of a tank is modeled by  $s = \sqrt{2gh}$  where:  
 $g$  is the acceleration due to gravity in  $m/s^2$   
 $h$  is the height of the water in m

At what height is the water flowing out at 9 m/s?  $h = ?$   $s = 9$

$$\begin{aligned} 9 &= \sqrt{2(9.8)h} \\ 81 &= 19.6h \\ 4.1 &= h \end{aligned}$$

height is 4.1 m

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ex3:

12. Cables and ropes are made of several strands that contain individual wires or threads. The term "7 x 19 cable" refers to a cable with 7 strands, each containing 19 wires.

Suppose a manufacturer uses the function  $d = \sqrt{\frac{b}{30}}$  to relate the diameter,  $d$ , in millimetres, of its 7 x 19 stainless steel aircraft cable to the safe working load,  $b$ , in kilograms.



a) Is a cable with a diameter of 6.4 mm large enough to support a mass of 1000 kg?

b) What is the safe working load for a cable that is 10 mm in diameter?

$$\begin{aligned} d &= \sqrt{\frac{b}{30}} \\ d &= \sqrt{\frac{1000}{30}} \quad \text{sub in } b = 1000 \text{ kg} \\ d &= 5.77 \text{ mm} \quad \text{mm} = \sqrt{\frac{\text{kg}}{x}} \\ \text{yes it is large enough} \end{aligned}$$

$$\begin{aligned} 10 &= \sqrt{\frac{b}{30}} \\ 100 &= \frac{b}{30} \\ \therefore 3000 &= b \end{aligned}$$

What are the units for 30?

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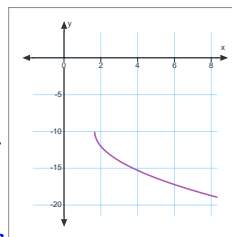
ex4: Solve  $10 = -2\sqrt{3x-5}$

$$y = -2\sqrt{3x-5} - 10$$

$$\begin{aligned} -5 &= \sqrt{3x-5} \\ \text{no solution} \end{aligned}$$

can't  $\sqrt{\quad}$  and get a neg.

what does the graph look like?



7bd  
9

$$\begin{aligned} 7.6) \quad & 4 = x + 2\sqrt{x-7} \\ & 4-x = -2\sqrt{x-7} \quad \begin{array}{l} x-7 \geq 0 \\ x \geq 7 \end{array} \\ & (4-x)^2 = 4(x-7) \\ & 4-x \geq 0 \quad \text{np.} \\ & 4 \geq x \end{aligned}$$

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HW: p. 16 #14, 16

quiz tomorrow

COMC reg  
Thurs Oct 28  
9:00 - 12:00

Attachments

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 quiz2.pdf