

Pre-Calculus 11 - VLN

Chapter 5: Radicals

Lesson 7: Solving Radical Equations

Question #1

Reference Q.20374

Solve the equation, $\sqrt{x+4} = x$, by:

- by graphing each side of the equation as two separate functions.
- combining into one equation, and graphing.

Question #2

Reference Q.20375

Prove that there is no solution to the equation, $\sqrt{-x-2} = x-6$, by:

- by graphing each side of the equation as two separate functions.
- combining into one equation, and graphing.

Question #3

Reference Q.20376

Find the solution(s) to the equation, $\sqrt{-x+3} = x^2$, by:

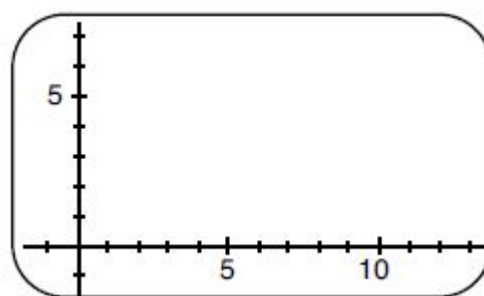
- by graphing each side of the equation as two separate functions.
- combining into one equation, and graphing.

Question #4

Reference Q.13833

Consider the equation $\sqrt{33-3x} = 3$.

- Determine the value of x for which the radical equation is defined.
- Complete the following statement.
"The grid provided shows the window
 $x: [\quad , \quad] y: [\quad , \quad]$."
- Solve the equation graphically. Sketch and label the displayed graphs on the grid.



- Verify the solution algebraically.

Question #5

Reference Q.13834

Describe how to solve the radical equation $\sqrt{6x+4} = 3x-1$ using the intersect feature of the calculator. State the solution of the equation to the nearest tenth.

Question #6

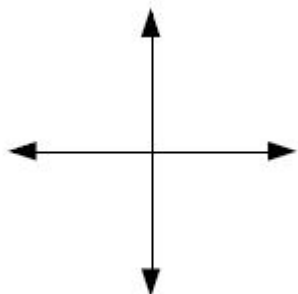
Reference Q.13835

For each of the following radical equations:

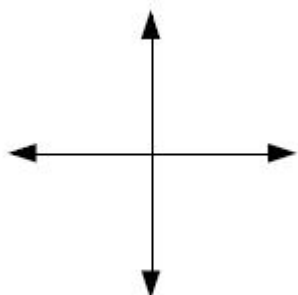
i) Determine the values of the variable for which the radical equation is defined.

ii) Solve the radical equation graphically. If the solution is not rational, answer to the nearest hundredth. Sketch and label your calculator graphs on the grid.

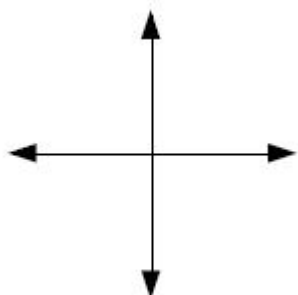
a. $\sqrt{3x-7} = x-5$



b. $\sqrt{x+5} - 2 = 2$



c. $\sqrt[3]{x-4} = 2.61$



Question #7

Reference Q.13832

Algebraically, determine any restrictions on the value of x in these radical equations.

a. $\sqrt{x-9} = 5$

b. $\sqrt{x} - 9 = 5$

c. $\sqrt{2+x} + 13 = 0$

d. $\sqrt{4-x} = 11$

e. $\sqrt{1-2x} = 4$

f. $\sqrt[3]{x+5} = 9$

g. $\sqrt{7x-2} = 8$

h. $\sqrt{x^2+1} = 6$

Question #8

Reference Q.13836

Solve the following radical equations algebraically.

a. $\sqrt{x-7} = 8$

b. $\sqrt{2x+3} = 4$

c. $\sqrt{\frac{3x-2}{5}} = 6$

d. $\sqrt[3]{x-3} = 7$

Question #9

Reference Q.13837

Algebraically determine the solution the following radical equations.

a. $\sqrt{12-x} = x$

b. $\sqrt{5x+4} = x+2$

Question #10

Reference Q.13839

When solving the equation $x-3 = \sqrt{x-1}$, the extraneous root is

- A. -2
- B. 2
- C. -5
- D. 5

Question #11

Reference Q.13840

The solution to the radical equation $\sqrt{x+7} = -2$ is

- A. $x = -3$
- B. $x = -9$
- C. $x = -11$
- D. there is no solution

Question #12

Reference Q.13841

Consider the radical equation $\sqrt{2(1-5x)} - 3 = 0$. The restriction on x is

- A. $x \leq \frac{1}{5}, x \in R$
- B. $x \leq 5, x \in R$
- C. $x \geq \frac{1}{5}, x \leq 5, x \in R$
- D. $x \geq 5, x \leq 5, x \in R$

Question #13

Reference Q.13842

The root of the equation $\sqrt{2(1-5x)} - 3 = 0$ is

- A. $\frac{7}{10}$
- B. $-\frac{7}{10}$
- C. $\frac{7}{5}$
- D. $-\frac{7}{5}$

Question #14

Reference Q.13843

The solution to the radical equation $\sqrt{x+3} = x+1$ is

- A. $x = -2$ only
- B. $x = 1$ only
- C. $x = -2, 1$
- D. $x = -1, 2$

Question #15

Reference Q.13838

The time it takes for a pendulum to swing back and forth (the period) depends on the length of the pendulum.

The formula $T = 2\pi\sqrt{\frac{L}{g}}$ is used to determine the period (in seconds) of a pendulum of length L metres. g is the acceleration due to gravity ($g = 9.81 \text{ m/s}^2$).



- a. Determine the period, to the nearest 0.01 seconds, of a pendulum of length 0.5 metres.
- b. Determine, to the nearest centimetre, the length of a pendulum whose period is 1 second.

Question #16

Reference Q.13844

The solution to the radical equation $6\sqrt[3]{2x-3} = 4$ can be written as a rational number in simplest form as $\frac{a}{b}$. The value of $a+b$ is _____.

Question #17

Reference Q.20361

- a. What value of x is not allowed in the equation $y = \sqrt{x-3}$? Explain.
- b. What value of x is not allowed in the equation $\sqrt{x-3} = 6$? Explain.

Question #18

Reference Q.20362

What is the domain for each of the following radical equations?

a. $\sqrt{x-10} = 4$

b. $\sqrt{x+1} = -9$

c. $13 = \sqrt{x+3}$

Question #19

Reference Q.20363

What is the domain for each of the following radical equations?

a. $\sqrt{2x-1} = -5$

b. $\sqrt{-x+1} = 2x+7$

c. $\sqrt{5x+2} = x-4$

Question #20

Reference Q.20364

a. Determine the solution(s) to the equation $x = \sqrt{3x-2}$.

b. Do your solution(s) from a) fit within the domain of the equation?