

A2.A.22: Solving Radicals 6: Solve radical equations

1 Which equation has both 3 and 6 as roots?

1) $\sqrt{x-2} = x-4$

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

2) $\sqrt{x-2} = 4-x$

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

2 Solve for all values of q that satisfy the equation $\sqrt{3q+7} = q+3$.

3 Solve for x : $\sqrt{x-4} = \frac{x}{4}$

4 Find, to the *nearest tenth*, the positive value of x in the equation $\sqrt{x^2+21} = 2x$

5 Solve for x : $x-1 = \sqrt{2x+13}$

6 Solve algebraically: $\sqrt{x+5} + 1 = x$

7 Solve algebraically for x : $\sqrt{3x+1} + 1 = x$

8 Solve for x : $x + \sqrt{2x-1} = 8$

9 Solve for x : $\sqrt{x^2+7} = x+1$

10 Solve algebraically for x : $\sqrt{x^2+x-1} + 11x = 7x+3$

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Answer Section

1 ANS: 4 REF: 089826siii

2 ANS:
-2, -1

REF: 060528b

3 ANS:
8

REF: 089406siii

4 ANS:
2.6

REF: 089713siii

5 ANS:
6

REF: 060016siii

6 ANS:
4

REF: 010427b

7 ANS:
5

REF: 060629b

8 ANS:
5

REF: 089637siii

9 ANS:
3

REF: 088615siii

10 ANS:

$$\sqrt{x^2 + x - 1} = -4x + 3 \quad -4\left(\frac{2}{3}\right) + 3 \geq 0$$

$$x^2 + x - 1 = 16x^2 - 24x + 9 \quad \frac{1}{3} \geq 0$$

$$0 = 15x^2 - 25x + 10$$

$$0 = 3x^2 - 5x + 2 \quad -4(1) + 3 < 0$$

$$0 = (3x - 2)(x - 1) \quad 1 \text{ is extraneous}$$

$$x = \frac{2}{3}, x \neq 1$$

REF: 011339a2