

E Lent Harder Algebraic Equations

Patrons are asked to solve the following equations. Be careful to check that your solutions work in the original equation since there is a danger that in squaring both sides of the equation you have introduced *fictitious solutions*.

1. $\sqrt{x+2} + \sqrt{x-1} = 3.$ $x = 2$

2. $\sqrt{x+1} - \sqrt{x-2} = 1.$ $x = 3$

3. $\sqrt{x+25} - \sqrt{x-23} = 1.$ $x = 144$

4. $2\sqrt{x+2} + \sqrt{x+2} = 9.$ $x = 7$

5. $\sqrt{x+9} - \sqrt{32-x} = -1.$ $x = 7$

6. $\sqrt{2x+1} - \sqrt{x-3} = 2.$ $x = 4$ or $x = 12$

7. $\sqrt{x-1} + \sqrt{3x+1} = 6.$ $x = 5$

8. $\sqrt{3x-2} - \sqrt{x+3} = 1.$ $x = 6$

9. $\sqrt{x+2} + \sqrt{2x+2} = 7.$ $x = 7$

10. $\sqrt{x-1} + \sqrt{x+7} + 4 = 0.$ No solutions

11. $\sqrt{2x+15} + \sqrt{4x+29} = 12.$ $x = 5$

12. $\sqrt{2x+2} + \sqrt{x-1} = 10.$ $x = 17$

13. $\sqrt{8x+1} + \sqrt{12x+1} = 20.$ No solutions

14. $\sqrt{x+8} + \sqrt{2x} = -8.$ No solutions

15. $\sqrt{2x+2} + \sqrt{x-3} = 6.$ $x = 7$