

Practice 7-5

Solving Square Root and Other Radical Equations

Solve. Check for extraneous solutions.

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|---|-------------------------------------|----------------------------------|
| 1. $(x - 2)^{\frac{1}{3}} = 5$ | 2. $3x^{\frac{4}{3}} + 5 = 53$ | 3. $4x^{\frac{3}{2}} - 5 = 103$ |
| 4. $\sqrt{x + 1} = x - 1$ | 5. $\sqrt{2x + 1} = -3$ | 6. $x^{\frac{1}{2}} - 5 = 0$ |
| 7. $\sqrt{x + 7} = x - 5$ | 8. $(2x + 1)^{\frac{1}{3}} = -3$ | 9. $2x^{\frac{1}{3}} - 2 = 0$ |
| 10. $\sqrt{2x - 5} = 7$ | 11. $\sqrt{2x - 4} = x - 2$ | 12. $\sqrt{x} + 6 = x$ |
| 13. $\sqrt{x + 2} = 10 - x$ | 14. $\sqrt{4x + 2} = \sqrt{3x + 4}$ | 15. $(7x - 3)^{\frac{1}{2}} = 5$ |
| 16. $(x - 2)^{\frac{2}{3}} - 4 = 5$ | 17. $2\sqrt{x - 1} = \sqrt{26 + x}$ | 18. $2x^{\frac{3}{4}} = 16$ |
| 19. $\sqrt{7x - 6} - \sqrt{5x + 2} = 0$ | 20. $\sqrt{3x - 3} - 6 = 0$ | 21. $5\sqrt{x} + 2 = 12$ |
| 22. $2x^{\frac{4}{3}} - 2 = 160$ | 23. $4x^{\frac{1}{2}} - 5 = 27$ | 24. $\sqrt{x + 1} = x + 1$ |
| 25. $\sqrt{2x + 1} = -5$ | 26. $x^{\frac{1}{6}} - 2 = 0$ | 27. $\sqrt{x + 2} = x - 18$ |
| 28. $(2x + 1)^{\frac{1}{3}} = 1$ | 29. $x^{\frac{1}{4}} + 3 = 0$ | 30. $\sqrt[3]{2x - 4} = -2$ |

For each equation, let Y1 = left side and Y2 = right side. Find where Y1 = Y2. Use the Technology Activity Steps on page 394 of the text to check that you've found all solutions.

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| 31. $x^{\frac{1}{4}} - 1 = 0$ | 32. $(x - 2)^{\frac{1}{3}} = -5$ | 33. $x^{\frac{1}{3}} - 2 = 0$ |
| 34. $\sqrt{3x} = 6$ | 35. $(2x + 7)^{\frac{1}{2}} - x = 2$ | 36. $\sqrt{4x} - 8 = 0$ |
| 37. $\sqrt{3x + 1} - 5 = 0$ | 38. $3(2x + 4)^{\frac{4}{3}} = 48$ | 39. $2\sqrt{x} = \sqrt{x + 6}$ |
| 40. $(2x + 1)^{\frac{1}{2}} = (5 - 2x)^{\frac{1}{2}}$ | 41. $(x + 14)^{\frac{1}{4}} = (2x)^{\frac{1}{2}}$ | 42. $\sqrt[3]{x - 2} = 4$ |

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