

SHOW ALL WORK.

Complete Parts A & B OR Parts B & C

PART A:

Solve the equation. Check your solution.

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

2. $\sqrt{3x+10} = 8$

3. $\sqrt{9x+11} = 14$

4. $\sqrt[3]{x} - 10 = -3$

5. $\sqrt[3]{x-16} = 2$

6. $\sqrt[3]{12x} - 13 = -7$

7. $2x^{\frac{3}{2}} = 16$

8. $\frac{1}{2}x^{\frac{5}{2}} = 16$

9. $9x^{\frac{3}{5}} = 72$

10. $\sqrt{4x+1} = \sqrt{x+10}$

11. $(x-2)^4 + 3 = 19$

12. $(x+1)^5 + 4 = 3$

Describe and correct the error in simplifying the expression.

13. $\sqrt[3]{x} + 2 = 4$
 $(\sqrt[3]{x} + 2)^3 = 4^3$
 $x + 8 = 64$
 $x = 56$

14. $(x+7)^{\frac{1}{2}} = 5$
 $[(x+7)^{\frac{1}{2}}]^2 = 5$
 $x+7 = 5$
 $x = -2$

PART B:

Solve the equation. Check your solution.

15. $\sqrt{2x} - \frac{2}{3} = 0$

16. $-2\sqrt{24x} + 13 = -11$

17. $8\sqrt{10x} - 7 = 9$

18. $3\sqrt[3]{16x} - 7 = 17$

19. $-5\sqrt[3]{8x} + 12 = -8$

20. $\sqrt[3]{4x+5} = \frac{1}{2}$

21. $(16x)^{\frac{3}{4}} + 44 = 556$

22. $\frac{1}{7}(x+9)^{\frac{3}{2}} = 49$

23. $(x-5)^{\frac{5}{3}} - 73 = 170$

24. $x-6 = \sqrt{3x}$

25. $\sqrt{21x+1} = x+5$

26. $\sqrt{44-2x} = x-10$

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

28. $\sqrt[3]{12x-5} - \sqrt[3]{8x+15} = 0$

29. $\sqrt{3x-8} + 1 = \sqrt{x+5}$

30. $\sqrt{x+2} = 2 - \sqrt{x}$

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

32. A burning candle has a radius of r inches and was initially h_0 inches tall. After t minutes, the height of the candle has been reduced to h inches.

$$r = \sqrt{\frac{kt}{\pi(h_0 - h)}}$$

How long will it take for the entire candle to burn if its radius is 0.875 inches, its initial height is 6.5 inches, and $k = 0.04$? (k is a constant)

33. The length (in inches) of a standard nail can be modeled by $L = 54d^{\frac{3}{2}}$ where d is the diameter (in inches) of the nail. What is the diameter of a standard nail that is 3 inches long?

PART C:

Solve the equation. Check your solution.

34. $\sqrt{5x+6} + 3 = \sqrt{3x+3} + 4$

Solve the system of equations.

35.
$$\begin{aligned} 5\sqrt{x} - 2\sqrt{y} &= 4\sqrt{2} \\ 2\sqrt{x} + 3\sqrt{y} &= 13\sqrt{2} \end{aligned}$$

36. You are trying to determine a truncated pyramid's height, which cannot be measured directly. The height h and the slant height s of the truncated pyramid are related by the formula shown below.

$$s = \sqrt{h^2 + \frac{1}{4}(b_2 - b_1)^2}$$



In the given formula, b_1 and b_2 are the side lengths of the upper and lower bases of the pyramid, respectively. If $s=5$, $b_1=2$, and $b_2=4$, what is the height of the pyramid?

Homework 4.4

1. $x=7$ 2. $x=18$ 3. $x=1$ 4. $x=343$ 5. $x=24$ 6. $x=18$ 7. $x=4$

8. $x=4$ 9. $x=32$ 10. $x=3$ 11. $x=0,4$ 12. $x=-2$

13. The first step should be subtracting 2 from both sides. $x = 8$.

14. Both sides of the equation should be squared. $x = 18$.

15. $x = \frac{2}{9}$ 16. $x = 6$ 17. $x = \frac{2}{5}$ 18. $x = 32$ 19. $x = 8$ 20. $x = -\frac{39}{7}$ 21. $x = 256$

22. $x = 40$ 23. $x = 32$ 24. $x = 12$ 25. $x = 3,8$ 26. $x = 14$ 27. $x = -\frac{21}{10}$

28. $x = 5$ 29. $x = 4$ 30. $x = \frac{1}{4}$ 31. $x = 3$ 32. ≈ 391 min. 33. ≈ 0.15 inches

34. $x = -1,2$ 35. $(8,18)$ 36. ≈ 4.9