1.5

2023-2024

Solving Equations (part 2)

SCORE: /

Name _____ Date _____ Period _____

Find and explain the mistake. Then fix the problem.

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

$-1 \quad -1$

$\sqrt{x} = 4$

$\sqrt{x}^{\,2} = 4^2$

$\boldsymbol{x = 16}$

2. $\frac{1}{2}(x-4)^3 = 32$

$\cdot 2 \qquad\qquad \cdot 2$

$(x-4)^3 = 64$

$\sqrt[3]{(x-4)^3} = \pm\sqrt[3]{64}$

$x - 4 = \pm 4$

$+4 \quad +4$

$\boldsymbol{x = 0, 8}$

3. $2|x+3| = 1$

-2 -2

$|x+3| = -1$

no solution

Solve each equation using the root principle. Leave answers in simplest radical form. Show your work.

4. $(x-2)^4 + 4 = 20$

5. $|3x| = 27$

6. $(x+3)^2 - 8 = 41$

7. $|x+1| = 6$

8. $\sqrt[3]{x-1} + 4 = 5$

9. $5x^3 + 3 = 43$

10. $|x+3|-8=-2$

11. $\sqrt{4x+1}-5=0$

12. $-3(x-6)^3=192$

13. $-2|x-1|=-18$

14. $\sqrt[4]{2x-5}-3=0$

15. $\left|\frac{x}{4}\right|=2$

16. $6\sqrt[4]{2x-7}+8=32$

17. $2x^4+1=11$

18. $2\sqrt{x+4}-5=-3$

19. $(x+4)^3-7=20$

Solve for the specified variable. Show work!

20. $V = \pi r^2 h$ (solve for r)

21. $V = \frac{1}{3}\pi r^3 h$ (solve for h)

22. $\sqrt{b^2 - 4ac} = k$ (solve for c)

23. $\sqrt{b^2 - 4ac} = k$ (solve for b)

Read the following situations. Define your variable and answer the question. **Show your work.**

24. How long does it take for a ball to hit the ground when it is dropped from a roof that is 25 feet above the ground? Use the formula $f(t) = -16t^2 + h_0$, where h_0 is the initial height, $f(t)$ is the final height, and t is the time in seconds.

25. You want to carpet a square room that is 144 square feet. How long is the side of the room? Use the area formula of a square.

Review

Find an algebraic expression for $h(x)$ using the given functions. Simplify if possible.

$f(x) = x^2 - 1$ and $g(x) = x - 10$

26. $h(x) = (g - f)(x)$

27. $h(x) = (f + f)(x)$

28. $h(x) = (g(f(x))$

29. $h(x) = (f \cdot f)(x)$