

Algebra 2
Quiz 5.1-5.3

NAME _____

Write the letter for the best answer.

Find the indicated real n th root(s).

1. $\sqrt{81}$

- A. -9
- B. 9
- C. ± 9
- D. \emptyset

2. $\sqrt[3]{64}$

- A. 4
- B. -4
- C. ± 4
- D. \emptyset

3. $\sqrt[4]{16}$

- A. 2
- B. ± 2
- C. -2
- D. \emptyset

4. $\sqrt[3]{-27}$

- A. 3
- B. -3
- C. ± 3
- D. \emptyset

Find the real solution(s) of the equation.

5. $3x^3 = -375$

- A. 5
- B. -5
- C. ± 5
- D. \emptyset

6. $3x^4 + 58 = -185$

- A. 3
- B. -3
- C. ± 3
- D. \emptyset

7. $4(x - 3)^3 = 68$

- A. $3 + \sqrt[3]{17}$
- B. $3 - \sqrt[3]{17}$
- C. $3 \pm \sqrt[3]{17}$
- D. $-3 + \sqrt[3]{14}$

Use the properties of rational exponents and radicals to simplify the expression.

8. $\frac{9}{9^{\frac{2}{5}}}$

- A. $9^{\frac{1}{5}}$
- B. $9^{\frac{2}{5}}$
- C. $9^{\frac{3}{5}}$
- D. $9^{\frac{4}{5}}$

9. $(4^6 \cdot 3^6)^{-\frac{1}{6}}$

- A. 12
- B. $\frac{1}{12}$
- C. 144
- D. $\frac{1}{144}$

10. $\frac{\sqrt[3]{135}}{\sqrt[3]{5}}$

- A. 81
- B. 27
- C. 9
- D. 3

11. $\sqrt[4]{7} \cdot \sqrt[4]{343}$

- A. 28
- B. 49
- C. 14
- D. 7

12. $\left(\frac{28^{\frac{3}{4}}}{7^{\frac{3}{4}}}\right)^5$

- A. $4^{\frac{15}{4}}$
- B. $21^{\frac{15}{4}}$
- C. $4^{\frac{30}{4}}$
- D. $21^{\frac{30}{4}}$

13. $\frac{\sqrt[3]{7}}{\sqrt[3]{5}}$

- A. $\sqrt[3]{175}$
- B. $\frac{\sqrt[3]{35}}{5}$
- C. $\frac{\sqrt[3]{175}}{5}$
- D. $\frac{\sqrt[3]{35}}{25}$

14. $\frac{9}{\sqrt{3+1}}$

- A. $\frac{9\sqrt{3}}{4}$
- B. $\frac{9\sqrt{3+9}}{4}$
- C. $\frac{9\sqrt{3-9}}{2}$
- D. $\frac{9\sqrt{3+9}}{2}$

15. $\sqrt[4]{243} - \sqrt[4]{3}$

- A. $\sqrt[4]{64}$
- B. $\sqrt[4]{189}$
- C. $2\sqrt[4]{3}$
- D. $3\sqrt[4]{3}$

$$16. \frac{2^{\frac{4}{27}} \cdot 12^{\frac{4}{27}}}{8^{\frac{4}{7}}}$$

- A. $32^{\frac{4}{7}}$
- B. $192^{\frac{4}{7}}$
- C. $6^{\frac{4}{7}}$
- D. $3^{\frac{4}{7}}$

$$17. \frac{\sqrt[3]{8} \cdot \sqrt[3]{16}}{\sqrt[3]{2}}$$

- A. 4
- B. 6
- C. 8
- D. 16

$$18. \left(\frac{76}{56}\right)^{-6}$$

- A. $\frac{5}{7}$
- B. $\frac{7}{5}$
- C. $\frac{25}{49}$
- D. $\frac{49}{25}$

$$19. \sqrt[4]{\frac{2}{162}}$$

- A. $\frac{1}{9}$
- B. $\frac{1}{8}$
- C. $\frac{1}{3}$
- D. $\frac{1}{4}$

$$20. \sqrt[5]{6} \cdot \sqrt[5]{16}$$

- A. 6
- B. $\sqrt[5]{3}$
- C. $2\sqrt[5]{3}$
- D. $4\sqrt[5]{3}$

$$21. \sqrt[3]{72a^5b^{10}}$$

- A. $3ab^3\sqrt[3]{8a^2b}$
- B. $2ab^3\sqrt[3]{9a^2b}$
- C. $3ab^2\sqrt[3]{8ab^2}$
- D. $2ab^2\sqrt[3]{9ab^2}$

$$22. \sqrt[4]{64a^7b^5}$$

- A. $2|ab|\sqrt[4]{4a^3b}$
- B. $4|ab|\sqrt[4]{4a^3b}$
- C. $2ab^4\sqrt[4]{4a^7b^5}$
- D. $4ab^4\sqrt[4]{4a^3b}$

$$23. \sqrt[3]{64a^7} - \sqrt[3]{8a^7}$$

- A. $56\sqrt[3]{a^7}$
- B. $4a^2\sqrt[3]{a}$
- C. $6a^2\sqrt[3]{a}$
- D. $2a^2\sqrt[3]{a}$

Graph the function and then determine the domain and range.

$$24. y = \sqrt{x} + 5$$

- A. $D: x \geq 0, R: y \leq 5$
- B. $D: x \geq 0, R: y \geq 5$
- C. $D: x \leq 0, R: y \leq 5$
- D. $D: x \leq 0, R: y \geq 5$

$$25. y = \sqrt[3]{3x}$$

- A. $D: \mathbb{R}, R: \mathbb{R}$
- B. $D: \mathbb{R}, R: -3 < y < 3$
- C. $D: -3 < x < 3, R: \mathbb{R}$
- D. $D: -10 < x < 10, R: -3 < y < 3$

$$26. y = (4x)^{\frac{1}{2}} - 2$$

- A. $D: x \leq -2, R: y \geq 0$
- B. $D: x \leq 0, R: y \geq -2$
- C. $D: x \geq -2, R: y \leq 0$
- D. $D: x \geq 0, R: y \geq -2$

Describe the transformation represented by each function.

$$27. f(x) = \sqrt{x}; g(x) = \frac{1}{3}\sqrt{x-1}$$

- A. Right 1, V. Shrink $\frac{1}{3}$
- B. Left 1, V. Shrink $\frac{1}{3}$
- C. Right 1, V. Stretch $\frac{1}{3}$
- D. Left 1, V. Stretch $\frac{1}{3}$

$$28. f(x) = \sqrt{x}; g(x) = -\sqrt[3]{x+2} - 2$$

- A. Right 2, Down 2, Reflection
- B. Left 2, Down 2, Reflection
- C. Left 2, Up 2, Reflection
- D. Right 2, Up 2, Reflection

Write a rule for g described by the transformations of the graph of f.

29. Let g be a vertical shrink by a factor of $\frac{1}{5}$, followed by a translation 4 units left and 3 units up of the graph $f(x) = \sqrt[3]{x}$.

- A. $g(x) = \frac{1}{5}\sqrt[3]{x-4} - 3$
- B. $g(x) = \frac{1}{5}\sqrt[3]{x+4} + 3$
- C. $g(x) = \frac{1}{5}\sqrt[3]{x-4} + 3$
- D. $g(x) = \frac{1}{5}4 + 3$