

Algebra 2H

Review: 7-1, 7-2, 7-3, 7-4, 7-6, 7-7

Simplify. Express final answers as integers.

1. $\left(16^{\sqrt{3}+1}\right)^{\sqrt{3}-1}$ 2. $\left(25^{1/2} \cdot 25^{1/3}\right)^3$

Simplify. Give answers in simplest radical form. Assume all variables are positive.

3. $\sqrt[5]{486x^{10}y^{11}}$ 4. $4\sqrt[3]{250} - 2\sqrt[3]{54}$

5. $\sqrt[4]{\frac{16}{27x^2}}$ 6. $\frac{\sqrt[6]{32} \cdot \sqrt[4]{8}}{\sqrt[3]{16}}$

Perform the function operations and state the domain.

7. $f(x) = 5x^{1/4} - 3$, $g(x) = x^{3/8} - 1$,
find $f(x) \cdot g(x)$

8. $f(x) = 3x^{2/3} + 1$, $g(x) = x^{-1/3}$,
find $f(x) \div g(x)$

9. $f(x) = 6\sqrt[5]{x^2} + 3\sqrt{x}$, $g(x) = 4\sqrt[5]{x^2} - 5\sqrt{x}$,
find $f(x) + g(x)$

10. $f(x) = 6x^2 - 24$, $g(x) = x - 2$,
find $f(x) - g(x)$

11. $f(x) = (1+x)^{1/2}$, $g(x) = x^2 + 2x$,
find $f(g(x))$

12. Find the inverse of $f(x) = \frac{1}{3}x^4 + 2$.

State the domain of the inverse.

13. Graph $y = x^2 + 1$ and its inverse. Is the inverse a function? Why or why not?

14. Verify (using the definition) that $f(x) = \sqrt[3]{4x-8}$ and $g(x) = \frac{x^3+8}{4}$ are inverses of each other.

15. Solve for F : $R = \sqrt{\frac{km}{F}}$

Solve for x . Be sure to check for extraneous solutions.

16. $(x-4)^4 = 625$

17. $2x^{-3/5} - 7 = -61$

18. $(2x+3)^{1/3} = 3$

19. $5(3x-1)^{4/7} - 7 = 73$

20. $2\sqrt{x+4} - 1 = x$

21. $\sqrt[3]{2x-1} = \sqrt[6]{x+1}$

22. $\sqrt{3x-2} - \sqrt{2x+5} = 1$

23. Use the data set 6, 22, 4, 15, 10, 8, 8, 7, 14, 20. Find the (a) mean, (b) median, (c) mode, (d) range, and (e) standard deviation. Construct a box-and-whisker plot for the data. Make a frequency distribution using 4 intervals, beginning with 0-5. Make a histogram for the data. Be sure to label the axes.

Answers:

1. 256 2. 3125 3. $3x^2y^2\sqrt[5]{2y}$

4. $14\sqrt[3]{2}$ 5. $\frac{2\sqrt[4]{3x^2}}{3x}$ 6. $\sqrt[4]{2}$

7. $5x^{5/8} - 5x^{1/4} - 3x^{3/8} + 3$, $x \geq 0$

8. $3x + x^{1/3}$, $x \neq 0$

9. $10\sqrt[5]{x^2} - 2\sqrt{x}$, $x \geq 0$

10. $6x^2 - x - 22$, all real numbers

11. $|x+1|$, all real numbers

12. $f^{-1}(x) = \pm\sqrt[4]{3x-6}$, $x \geq 2$

13. inverse is not a function 15. $F = \frac{km}{R^2}$

16. 9, -1 17. $\frac{1}{-243}$ 18. 12

19. 43 20. 5 21. $\frac{5}{4}$

22. 22 23. (a) 11.4 (b) 9 (c) 8

(d) 18 (e) 5.8