Algebra 2 Chapter 7 Review

Simplify

1. $\sqrt{49x^2}$ $= 7x$

2. $\sqrt[3]{-64a^6b^9}$ $= -4a^2b^3$

3. $\sqrt{(3p-5q)^2}$ $= (3p-5q)$

4. $\sqrt{4x^2+12x+9}$ $= (2x+3)$

5. $\sqrt{96}$ $= 4\sqrt{6}$

6. $\sqrt{50x^3y^2}$ $= 5xy\sqrt{2x}$

7. $\sqrt{6ab}\cdot\sqrt{3a}$ $= 3a\sqrt{2b}$

8. $\sqrt[3]{\frac{5}{27}}$ $= \frac{\sqrt[3]{5}}{3}$

9. $\frac{15}{2\sqrt{5}}$ $= \frac{3\sqrt{5}}{2}$

10. $\frac{4}{\sqrt[4]{2}}$ $= 2\sqrt[4]{8}$

11. $\sqrt{5}\left(2\sqrt{10}+3\sqrt{2}\right)$ $10\sqrt{2}+3\sqrt{10}$

12. $\sqrt{4}\left(2\sqrt{4}-5\sqrt{2}\right)$ $8-10\sqrt{2}$

13. $5+2\sqrt{6}-3\sqrt{6}+9$ $14-\sqrt{6}$

14. $3\sqrt{27}-5\sqrt{3}+2\sqrt{48}$ $12\sqrt{3}$

15. $7\sqrt[3]{24}+\sqrt[3]{81}$ $17\sqrt[3]{3}$

16. $\left(6+\sqrt{3}\right)\left(2\sqrt{5}-\sqrt{3}\right)$ $12\sqrt{5}-6\sqrt{3}+2\sqrt{15}-3$

17. $\left(\sqrt{2}-\sqrt{3}\right)\left(\sqrt{2}+\sqrt{3}\right)$ -1

18. $\frac{4-\sqrt{3}}{1+\sqrt{3}}$ $\frac{-7+5\sqrt{3}}{2}$ or $\frac{7-5\sqrt{3}}{-2}$

Express using rational exponents

19. $\sqrt[4]{r^3}$ $r^{3/4}$

20. $\sqrt[3]{8m^2n^7}$ $2m^{2/3}n^{7/3}$

Express as a single radical

21. $5^{\frac{1}{3}}$ $\sqrt[3]{5}$

22. $x^{\frac{3}{4}}$ $\sqrt[4]{x^3}$

23. $2^{\frac{2}{3}}x^{\frac{5}{6}}y^{\frac{1}{2}}$ $\sqrt[6]{16x^5y^3}$

Evaluate or simplify **without** a calculator.

24. $125^{\frac{1}{3}}$ $= 5$

25. $4^{-\frac{1}{2}}$ $= \frac{1}{2}$

26. $8^{\frac{2}{3}}\cdot 27^{\frac{2}{3}}$ $= 36$

27. $\left(8x^{-9}y^6\right)^{-\frac{2}{3}}$ $= \frac{x^6}{4y^4}$

Solve each equation

28. $5-\sqrt{3x+4}=0$

$x=7$

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

No Solution

30. $\sqrt{x^2-7}=\sqrt{4x+25}$

$x=8; x=-4$

31. $\sqrt[3]{5n+4}-4=0$

$n=12$

32. $\sqrt{x+8}-2=\sqrt{x}$

$x=1$

33. $\sqrt{x-5}-\sqrt{x}=1$

No Solution

34. $\sqrt[3]{5x+2}=\sqrt[3]{-8}$

$x=-2$

35. $x^2-9=0$

$x=\pm 3$

36. $x^3+27=0$

$x=-3$

Evaluate using your calculator.

37. $\sqrt[3]{259}\cdot\sqrt[5]{273}$ ≈

19.573

38. $(0.216)^{\frac{2}{3}}$ ≈

0.36

39. $\frac{\sqrt{315}}{\sqrt[3]{2345}}$ ≈ 1.336

40.

BUSINESS A company that produces DVDs uses the formula $C = 88n^{\frac{1}{3}} + 330$ to calculate the cost C in dollars of producing n DVDs per day. What is the company's cost to produce 150 DVDs per day? Round your answer to the nearest dollar.

$798

41.

ELECTRICITY The amount of current in amperes I that an appliance uses can be calculated using the formula $I = \left(\frac{P}{R}\right)^{\frac{1}{2}}$, where P is the power in watts and R is the resistance in ohms. How much current does an appliance use if $P = 500$ watts and $R = 10$ ohms? Round your answer to the nearest tenth.

7.1 amps

42. If $f(x)=3x+7$ and $g(x)=2x-5$, what is $[g\circ f](-3)$?

-9

43. If $f(x)=x^2$ and $g(x)=3x-1$, what is $f(g(x))$?

$9x^2-6x+1$

44. If $f(x)=\{(3,2),(4,-5)\}$ and $g(x)=\{(11,3),(1,4)\}$, what is $[f\circ g](x)$?

$\{(11,2)(1,-5)\}$

45. Find the inverse of the relation $\{(-2,5),(0,4),(1,-8),(4,7)\}$

$\{(5,-2)(4,0)(-8,1)(7,4)\}$

46. Find the inverse of the function $f(x)=4x-2$

$f^{-1}(x)=\dfrac{x+2}{4}$

47. Determine whether $g(x)=3x-6$ and $f(x)=\dfrac{1}{3}x+2$ are inverses.

Support your answer by using composition of functions.

① $(f\circ g)(x)=x$ ✓

$g(x)=3x-6$

$f(3x-6)=\frac{1}{3}(3x-6)+2$

$=x-2+2$

$=x$

② $(g\circ f)(x)=x$ ✓

$f(x)=\frac{1}{3}x+2$

$g(\frac{1}{3}x+2)=3(\frac{1}{3}x+2)-6$

$=x+6-6$

$=x$

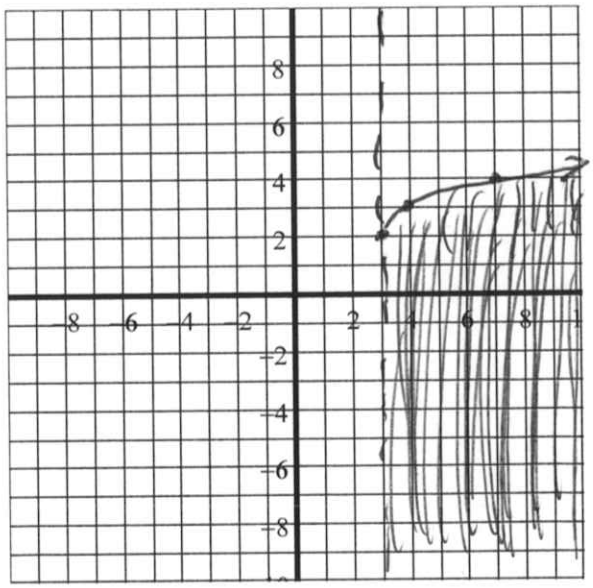
Therefore g and f are inverses.

48. State the domain and range of $y=2+\sqrt{x-3}$

D: $x\geq 3$

R: $y\geq 2$

49. Graph: $y\leq 2+\sqrt{x-3}$



50. Graph the inverse relation of the given graph.