

1. Evaluate the following

a. $\sqrt{\frac{6}{196}}$

b. $\sqrt[3]{88}$

c. $\sqrt[5]{16} \cdot \sqrt[5]{8}$

d. $(\sqrt[3]{64})^{-4}$

e. $16^{-\frac{3}{2}}$

f. $8^{\frac{5}{3}}$

2. Simplify the following

a. $\sqrt{20x^6y^7}$

b. $\sqrt[5]{18x^3y^{14}z^{20}}$

c. $\sqrt[4]{\frac{x^5}{y^{17}}}$

d. $\sqrt[3]{16x^7y^2} \cdot \sqrt[3]{6xy^5}$

3. Let $f(x) = -x + 4$, $g(x) = x^3 + 2x$, $h(x) = \sqrt{x}$. Perform the indicated operation and state the domain.

a. $f(g(x))$

b. $h(f(x))$

c. $f(f(x))$

d. Find $f(g(-9))$

4. Verify that f and g are inverse functions $f(x) = 2x - 4$ and $g(x) = \frac{1}{2}x + 2$

5. Graph $y = -\frac{1}{2}\sqrt{x-2}$. State the domain and range.

6. Graph $y = 4\sqrt[3]{x+3} - 1$. State the domain and range.

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

8. Solve $4x^{\frac{4}{3}} = 324$

9. Solve $x = \sqrt{4x-3}$

10. Solve $\sqrt{3x+7} = 4$

11. Solve $(4x-4)^{\frac{1}{2}} = (5x-1)^{\frac{1}{2}} - 1$

12. Find the inverse of $f(x) = -2x^3 + 1$

13. Find the inverse of $f(x) = 4x^2 + 9, x \geq 0$

14. Solve $\sqrt{x} - \sqrt{x+5} < -1$