6.2 Apply Properties of Rational Exponents *pp. 420–427*

EXAMPLE

Write the expression in simplest form. Assume all variables are positive.

a. $\sqrt[3]{48} = \sqrt[3]{8 \cdot 6} = \sqrt[3]{8} \cdot \sqrt[3]{6} = 2\sqrt[3]{6}$

b. $\left(\dfrac{x^4}{y^8}\right)^{1/2} = \dfrac{(x^4)^{1/2}}{(y^8)^{1/2}} = \dfrac{x^{4 \cdot 1/2}}{y^{8 \cdot 1/2}} = \dfrac{x^2}{y^4}$

EXERCISES

Write the expression in simplest form. Assume all variables are positive.

**EXAMPLES
4, 6, and 7**
on pp. 422–423
for Exs. 16–19

16. $\sqrt[3]{80}$
17. $(3^4 \cdot 5^4)^{-1/4}$
18. $(25a^{10}b^{16})^{1/2}$
19. $\sqrt{\dfrac{18x^5y^4}{49xz^3}}$

6.3 Perform Function Operations and Composition *pp. 428–434*

EXAMPLE

Let $f(x) = 3x^2 + 1$ and $g(x) = x + 4$. Perform the indicated operation.

a. $f(x) + g(x) = (3x^2 + 1) + (x + 4) = 3x^2 + x + 5$

b. $f(x) \cdot g(x) = (3x^2 + 1)(x + 4) = 3x^3 + 12x^2 + x + 4$

c. $f(g(x)) = f(x + 4) = 3(x + 4)^2 + 1 = 3(x^2 + 8x + 16) + 1 = 3x^2 + 24x + 49$

EXERCISES

**EXAMPLES
1, 2, and 5**
on pp. 428–430
for Exs. 20–23

Let $f(x) = 4x - 6$ and $g(x) = x + 8$. Perform the indicated operation.

20. $f(x) + g(x)$
21. $f(x) - g(x)$
22. $f(x) \cdot g(x)$
23. $f(g(x))$

6.4 Use Inverse Functions *pp. 438–445*

EXAMPLE

Find the inverse of the function $y = 3x + 7$.

$y = 3x + 7$ **Write original function.**

$x = 3y + 7$ **Switch x and y.**

$x - 7 = 3y$ **Subtract 7 from each side.**

$\dfrac{1}{3}x - \dfrac{7}{3} = y$ **Divide each side by 3.**

EXERCISES

**EXAMPLES
1, 4, and 5**
on pp. 438–441
for Exs. 24–26

Find the inverse of the function.

24. $y = \dfrac{1}{3}x + 4$
25. $y = 4x^2 + 9, \, x \geq 0$
26. $f(x) = x^3 - 4$