

Simplify.

$$\frac{ab^3c^5}{a^4bc^7} = \frac{b^2}{a^3c^2}$$

Simplify.

$$(x^{-1}y^2)^{-3}(x^2y^{-4})^{-3}$$

$$x^3y^{-6}x^{-6}y^{12} = x^{-3}y^6 = \frac{y^6}{x^3}$$

6.6

$$25. \cdot \left(\frac{1}{a} + \frac{1}{b}\right) = \left(\frac{1}{x}\right) \cdot abx \quad ; \quad x$$

$$bx + ax = ab$$

$$x(b+a) = ab$$

$$x = \frac{ab}{a+b}$$

7.1

$$\begin{aligned}
 38. & \left(b^{\frac{2}{3}} \cdot b^{\frac{1}{6}} \right)^6 \\
 &= b^{\frac{2}{3} \cdot \frac{6}{1}} b^{\frac{1}{6} \cdot \frac{6}{1}} \\
 &= b^4 b^1 = \boxed{b^5}
 \end{aligned}$$

$$\begin{aligned}
 66. & \left(\frac{49c^{\frac{5}{3}}}{a^{-\frac{1}{4}} b^{\frac{5}{6}}} \right)^{-\frac{3}{2}} = \frac{49^{-\frac{3}{2}} c^{\frac{5}{3} \cdot -\frac{3}{2}}}{a^{-\frac{1}{4} \cdot -\frac{3}{2}} b^{\frac{5}{6} \cdot -\frac{3}{2}}} \\
 &= \frac{7^{\cancel{2} \cdot -\frac{3}{2}} c^{-\frac{5}{2}}}{a^{\frac{3}{8}} b^{-\frac{5}{4}}} = \frac{b^{\frac{5}{4}}}{7^3 a^{\frac{3}{8}} c^{\frac{5}{2}}} \quad \begin{array}{r} 649 \\ \times 7 \\ \hline 343 \end{array} \\
 &= \boxed{\frac{b^{\frac{5}{4}}}{343 a^{\frac{3}{8}} c^{\frac{5}{2}}}}
 \end{aligned}$$

72. $b^{-2/5} (b^{-3/5} - b^{7/5})$

$x^m x^n = x^{m+n}$
 $(x^m)^n = x^{mn}$

$b^{-2/5} b^{-3/5} - b^{-2/5} b^{7/5}$

$\frac{b^{-1}}{1} = \frac{1}{b}$

$b^{-2/5 + -3/5} - b^{-2/5 + 7/5}$

$b^{-1} - b^1 = \boxed{\frac{1}{b} - b}$

$$\sqrt[n]{x^n} = \begin{cases} x, & \text{if } n \text{ is odd} \\ |x|, & \text{if } n \text{ is even} \end{cases}$$

$\sqrt[n]{x}$ = the # that we raise to the n^{th} power to get x

e.g. $\sqrt[3]{64} = 4$; $\sqrt{81} = 9$

understood to be $\sqrt{81}$

$$\sqrt[3]{8} = 2$$

$$\sqrt[3]{2^3}$$

$$\sqrt[3]{-8} = -2$$

$$\sqrt{4} = 2$$

$$\sqrt{(-2)^2} = |-2| = 2$$

$$114. \sqrt{x^{16}} = \sqrt{(x^8)^2}$$

$$= |x^8| = \boxed{x^8}$$

$$(x^m)^n \neq x^{(m^n)}$$

$$118. \sqrt{x^2 y^{10}} = \sqrt{(x^2)(y^5)^2}$$

$$= |xy^5|$$

$$124. \quad -\sqrt[3]{x^{15}y^3} = -\sqrt[3]{(x^5)^3 y^3}$$

$$= \boxed{-x^5 y}$$

$\sqrt[n]{x^n} = \begin{cases} x & \text{if } n \text{ is odd} \\ |x| & \text{if } n \text{ is even} \end{cases}$

$$136. \quad \sqrt[3]{-64x^9y^{12}} = \sqrt[3]{(-4)^3(x^3)^3(y^4)^3}$$

$$= \boxed{-4x^3y^4}$$

$$146. \quad \sqrt[4]{81x^4y^{20}} = \sqrt[4]{(3)^4(x)^4(y^5)^4}$$

$$= |3xy^5| = \boxed{3|xy^5|}$$

$$150. \quad \sqrt[5]{243x^{10}y^{40}} = \sqrt[5]{(3)^5(x^2)^5(y^8)^5}$$

$$= \boxed{3x^2y^8}$$

7.2

$$16. \sqrt{60xy^7z^{12}} = \sqrt{2^2 \cdot 15x(y^3)^2 \cdot y \cdot (z^6)^2}$$

$\begin{matrix} \uparrow & \uparrow \\ 4 \cdot 15 & y^6 \cdot y \end{matrix}$

$$= |2y^3z| \sqrt{15xy}$$

$$= \boxed{2|y^3|z^6\sqrt{15xy}}$$

$$20. \sqrt[3]{a^8b^{11}c^{15}} = \sqrt[3]{(a^2)^3 a^2 (b^3)^3 b^2 (c^5)^3}$$

$\begin{matrix} \uparrow & \uparrow \\ a^6 \cdot a^2 & b^9 \cdot b^2 \end{matrix}$

$$= \boxed{a^2b^3c^5\sqrt[3]{a^2b^2}}$$

$$22. \quad \sqrt[4]{64x^8y^{10}} = \sqrt[4]{\underbrace{2^4}_{2^2 \cdot 2^2} \cdot \underbrace{4}_{(x^2)^2} \cdot \underbrace{(y^2)^2}_{y^8 \cdot y^2} \cdot y^2}$$

$\begin{matrix} 8 \cdot 8 \\ 2^3 \cdot 2^3 \\ 2^6 \end{matrix}$

$$= \underline{2} \underline{x^2} \underline{y^2} \sqrt[4]{\underline{4} \underline{y^2}}$$

$$\sqrt[4]{x} = x^{\frac{1}{4}} = (x^{\frac{1}{2}})^{\frac{1}{2}} = \sqrt{\sqrt{x}}$$

HW

7.1 # 39-73 odd

125-149 odd

7.2 # 11-21 odd