Simplify.

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

Simplify.

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

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

6.6

13. $\cancel{R}R_1R_2\left(\frac{1}{\cancel{R}}\right) = \left(\frac{1}{R_1} + \frac{1}{R_2}\right)RR_1R_2$; R_2

$R_1R_2 = RR_2 + RR_1$

$R_1R_2 - RR_2 = RR_1$

$R_2(R_1 - R) = RR_1$

$$\boxed{R_2 = \frac{RR_1}{R_1 - R}}$$

7.1

38. $\left(b^{\frac{2}{3}} \cdot b^{\frac{1}{6}}\right)^{\cancel{6}/1}$

$= b^{\frac{2}{3}\cdot\frac{6}{1}} \cdot b^{\frac{1}{6}\cdot\frac{6}{1}}$

$= b^{4} \cdot b^{1}$

$= \boxed{b^{5}}$

66. $\left(\dfrac{49c^{5/3}}{a^{-1/4}b^{5/6}}\right)^{-3/2}$

$= \dfrac{49^{-3/2}\, c^{\frac{5}{3}\cdot\frac{-3}{2}}}{a^{\frac{-1}{4}\cdot\frac{-3}{2}}\, b^{\frac{5}{6}\cdot\frac{-3}{2}}} = \dfrac{7^{\cancel{2}\cdot\frac{-3}{\cancel{2}}}\, c^{-\frac{5}{2}}}{a^{\frac{3}{8}}\, b^{-\frac{5}{4}}}$

$= \dfrac{b^{5/4}}{7^{3}a^{3/8}c^{5/2}} = \boxed{\dfrac{b^{5/4}}{343a^{3/8}c^{5/2}}}$

$$\begin{array}{r} {}^{6}49 \\ \times\ 7 \\ \hline 343 \end{array}$$

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

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

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

$= b^{-1} - b$

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

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

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

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

understood to be $\sqrt[2]{81}$

114. $\sqrt{x^{16}} = \sqrt[2]{(x^8)^2} = |x^8| = \boxed{x^8}$

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

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

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

$\sqrt[2]{4} = 2$

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

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

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

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

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

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

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

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

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

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

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

$= 3x^2y^8$

7.2

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

$4 \cdot 15 \quad y^6 \cdot y$

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

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

$a^6 a^2 \; b^9 b^2$

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

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

$2^4 \cdot 2^2 \quad y^8 \cdot y^2$

$32 \cdot 2$

$16 \cdot 2 \cdot 2$

$\underbrace{2 \cdot 2 \cdot 2 \cdot 2} \cdot 2 \cdot 2$

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

HW

7.1 # 39-73 odd
125-149 odd

7.2 # 11-21 odd