

p. 236

$$\begin{aligned}
 5c) \frac{(10x)^{-1} y^3}{15x^3 y^{-3}} \\
 &= \frac{(10^{-1}) x^{-1} y^3}{15 x^3 y^{-3}} \\
 &= \frac{1}{10} \cdot \frac{1}{15} x^{-1-3} y^{3-(-3)} \\
 &= \frac{1}{150} x^{-4} y^6 \\
 &= \frac{y^6}{150 x^4}
 \end{aligned}$$

$$\begin{aligned}
 6a) (x^4)^{\frac{1}{2}} (x^6)^{-\frac{1}{3}} \\
 &= x^2 \cdot x^{-2} \\
 &= x^{2+(-2)} \\
 &= x^0 \\
 &= 1
 \end{aligned}$$

$$\begin{aligned}
 c) \frac{\sqrt{25m^{-10}}}{\sqrt[3]{36m^{10}}} \\
 &= \frac{5(m^{-10})^{\frac{1}{2}}}{6(m^{10})^{\frac{1}{3}}} \\
 &= \frac{5m^{-6}}{6m^{\frac{10}{3}}} \\
 &= \frac{5m^{-6-5}}{6} \\
 &= \frac{5m^{-11}}{6} \\
 &= \frac{5}{6m^{11}}
 \end{aligned}$$

$$\begin{aligned}
 e) \frac{(32x^5)^{-2} \cdot 0.2}{(x^{-1})^{10}} \\
 &= \frac{(32^{-2} x^{-10})^{\frac{1}{5}}}{(x^{-10})^{\frac{1}{5}}} \\
 &= \frac{32^{-2} x^{-2}}{x^{-2}} \\
 &= \frac{1}{(5\sqrt[5]{32})^2} \\
 &= \frac{1}{2^2} \\
 &= \frac{1}{4}
 \end{aligned}$$

$$7c) \frac{(81x^4y^6)^{\frac{1}{2}}}{8(x^9y^3)^{\frac{1}{3}}}; x=10, y=5$$

$$\begin{aligned}
 &= \frac{\sqrt{81} (x^4)^{\frac{1}{2}} (y^6)^{\frac{1}{2}}}{8 (x^9)^{\frac{1}{3}} (y^3)^{\frac{1}{3}}} \\
 &= \frac{9x^2 y^3}{8x^3 y} \\
 &= \frac{9y^2}{8x} \\
 &= \frac{9(5)^2}{8(10)} \\
 &= \frac{9 \cdot 25}{8 \cdot 10} \\
 &= \frac{45}{16}
 \end{aligned}$$

$$\begin{aligned}
 p. 237 \ 8a) \sqrt[3]{10000x} \\
 &= 100^{\frac{2}{3}} (x^{\frac{1}{3}})^{\frac{2}{3}} \\
 &= 10^3 x^{\frac{2}{9}} \\
 &= 1000(16)^{\frac{3}{9}} \\
 &= 1000(\sqrt[3]{16})^3 \\
 &= 1000(2)^3 \\
 &= 8000
 \end{aligned}$$

$$\begin{aligned}
 p. 237 \ 9c) \frac{(\sqrt{64a^{12}})^{\frac{2}{3}}}{(a^{1.5})^{-6}} \\
 &= \frac{(64^{\frac{1}{2}} a^{\frac{12}{2}})^{\frac{2}{3}}}{(a^{-9})^{\frac{2}{3}}}
 \end{aligned}$$

$$\begin{aligned}
 &= \frac{(8a^6)^{\frac{2}{3}}}{a^{-6}} \\
 &= (\sqrt[3]{8})^2 a^{6 \cdot \frac{2}{3} - (-6)} \\
 &= 2^2 a^{4+6} \\
 &= 4a^{10}
 \end{aligned}$$

$$\begin{aligned}
 c) (-2a^2b)^{-3} \sqrt{25a^4b^6} \\
 &= (-2)^{-3} (a^2)^{-3} (b)^{-3} \cdot 5(a^4)^{\frac{1}{2}} (b^6)^{\frac{1}{2}} \\
 &= (-2)^{-3} a^{-6} b^{-3} \cdot 5a^2 b^3 \\
 &= \frac{1}{(-2)^3} a^{-6+2} b^{-3+3} \cdot 5 \\
 &= \frac{5}{-8} a^{-4} \\
 &= \frac{-5}{8a^4} \\
 &= \frac{5}{8(1)^4} \\
 &= \frac{5}{8}
 \end{aligned}$$