

7.  $\left(\frac{2}{3}\right)^{-3}$

$$\left(\frac{3}{2}\right)^3$$

$$\frac{27}{8}$$

8.  $64^{-4/3}$

$$\frac{1}{64^{4/3}}$$

$$\frac{1}{(\sqrt[3]{64})^4}$$

$$\frac{1}{(4)^4}$$

$$\frac{1}{256}$$

9.  $(-216)^{-1/3}$

$$\frac{1}{(-216)^{1/3}}$$

$$\frac{1}{\sqrt[3]{-216}}$$

$$-\frac{1}{6}$$

10.  $49^{-0.5}$

$$\frac{1}{49^{1/2}}$$

$$\frac{1}{\sqrt{49}}$$

$$\frac{1}{7}$$



$$11. \quad \frac{81^{-0.75}}{81^{-3/4}}$$

$$\left(\frac{1}{81}\right)^3$$

$$\frac{1}{3^3}$$

$$\frac{1}{27}$$

$$13. \quad \frac{(3.5^{-4})(3.5^5)}{(3.5^{-1})}$$

$$\frac{3.5^{-1}}{3.5^{-1}}$$

$$\frac{-1 - (-1)}{-1 + 1}$$

$$3.5^0$$

$$1$$

$$12. \quad \frac{1}{125} = \frac{1}{5^3}$$

$$125^{-1}$$

$$(5)^{-3}$$

$$14. a) \left( \frac{5 a^{-4} b^7}{2} \right)^{-3}$$

$$\frac{5^{-3} a^{12} b^{-21}}{2^{-3}}$$

$$\frac{2^3 a^{12}}{5^3 b^{21}}$$

$$b) m^{-2} n^6 \cdot m^3 n^{-8}$$

$$m^1 n^{-2}$$

$$\frac{m}{n^2}$$

$$c) \left( \frac{w^{-15} y^{12}}{-64 x^3} \right)^{-1/3}$$

$$\frac{w^{15/3} y^{-12/3}}{(-64)^{-1/3} x^{-3/3}}$$

$$\frac{w^5 y^{-4}}{(-64)^{1/3} x^{-1}}$$

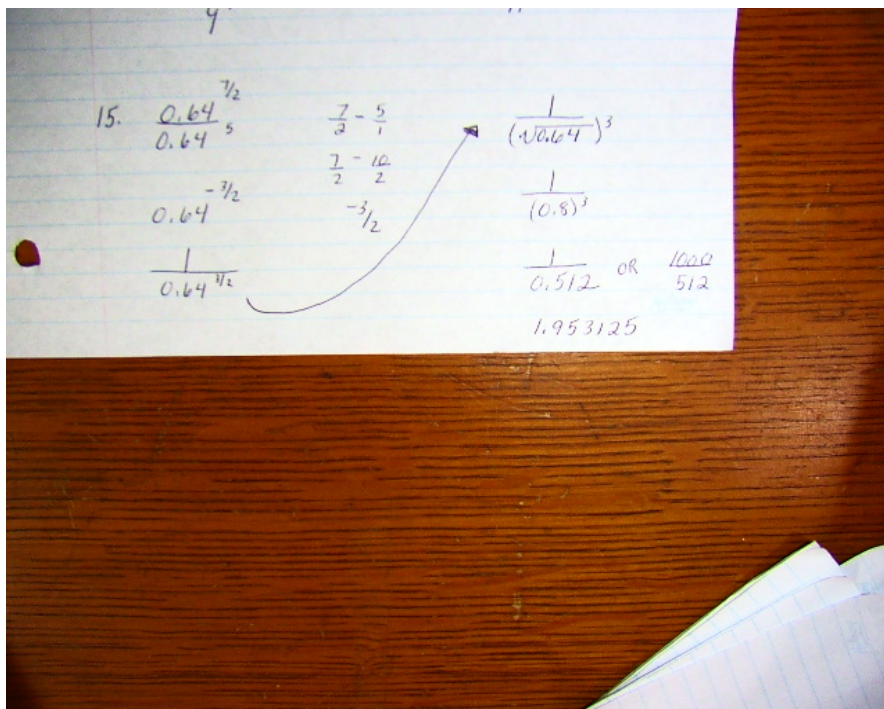
$$\frac{(-64)^{1/3} w^5 x^1}{y^4}$$

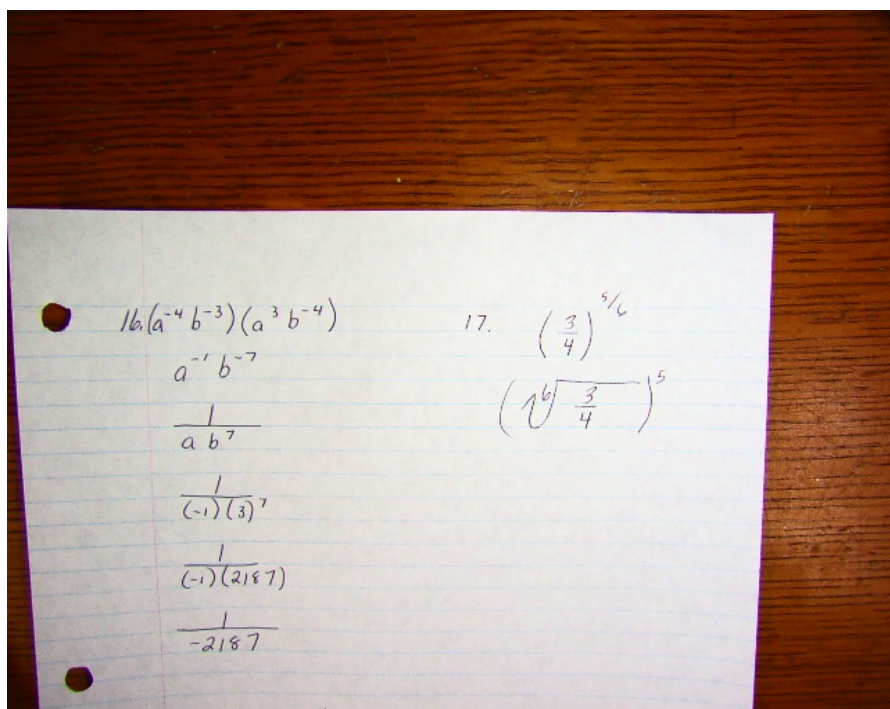
$$d) \left( \frac{m^3 n^{-3}}{m^2 n} \right)^{-1}$$

$$\frac{m^{-3} n^3}{m^{-6} n^4}$$

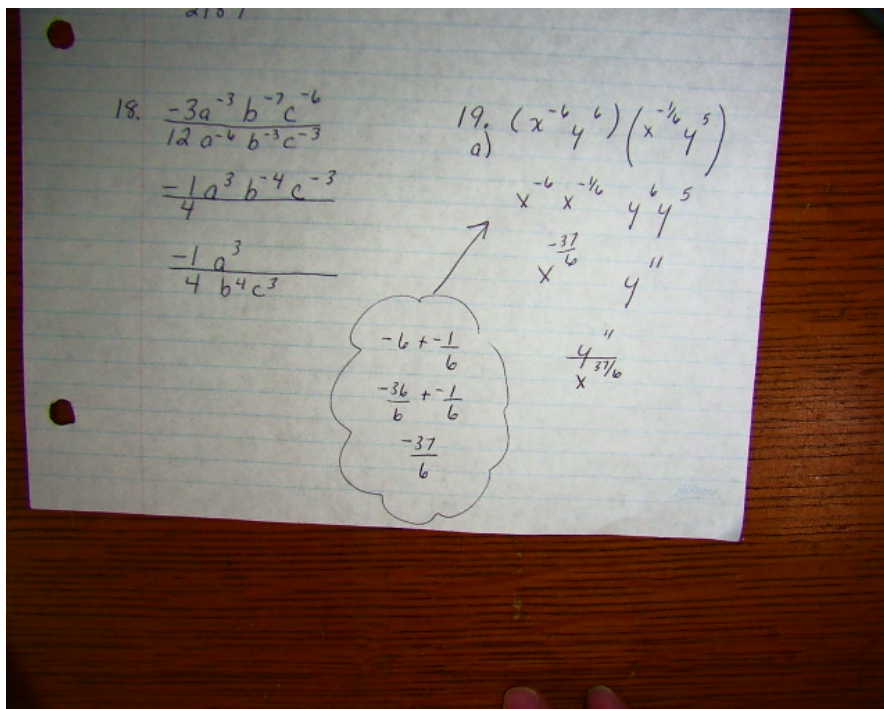
$$m^5 n^{-1}$$

$$\frac{m^5}{n}$$











19. Identify any errors in each simplification. Write a correct solution.

$$\begin{aligned}
 \text{a) } (x^{-6}y^6) \left( x^{\frac{1}{6}}y^5 \right) &= x^{-6} \cdot x^{\frac{1}{6}} \cdot y^6 \cdot y^5 \\
 &= x^{-5\frac{5}{6}} \cdot y^{11} \\
 &= x^{-5\frac{5}{6}} y^{11}
 \end{aligned}$$

*Add exponents, don't multiply here*

$$\begin{aligned}
 \text{b) } \left( \frac{2m^{\frac{1}{4}}}{n^4} \right)^{-4} &= \frac{2^{-4} m^{-1}}{n^{-16}} \\
 &= \frac{1}{16} m^{-1} n^{16} \\
 &= \frac{n^{16}}{16m}
 \end{aligned}$$

20. Use exponent laws to simplify  $(\sqrt[6]{x})(\sqrt[3]{x^3})$ . Explain your strategy.

b)  $\left(\frac{2m^{1/4}}{n^4}\right)^{-4}$

$$\frac{2^{-4} m^{-4 \cdot 1/4}}{n^{-16}}$$
$$\frac{2^{-4} m^{-1}}{n^{-16}}$$
$$\frac{n^{16}}{2^4 m^1}$$

$$20. \quad (\sqrt[8]{x}) (\sqrt[5]{x^3})$$

$$x^{1/8} \quad x^{3/5}$$

$$x^{29/40}$$

$$\frac{1}{8} + \frac{3}{5}$$

$$\frac{5}{40} + \frac{24}{40}$$

$$\frac{29}{40}$$