

Ex 4.1.5

$$i) \frac{1280 \cdot 5^7 \cdot \overbrace{125}^{5^3}}{\underbrace{(0,2 \cdot 25)^3}_5}$$

$$= \frac{2^8 \cdot 5 \cdot 5^7 \cdot \cancel{5^3}}{\cancel{5^3}} = 2^8 \cdot 5^8 = (2 \cdot 5)^8 = 10^8$$

$$\begin{aligned} 1280 &= 5 \cdot 256 \\ &= 5 \cdot 2^8 \end{aligned}$$

EX 4.1.6

$$d) \frac{(4x^2y^3)^5}{(2xy)^3} \div \frac{x^7}{(y^3)^4}$$

$$= \frac{4^5 \cdot \cancel{x^{10}} \cdot \cancel{y^{15}}}{2^3 \cdot \cancel{x^3} \cdot \cancel{y^3}} \cdot \frac{\cancel{y^{12}}}{\cancel{x^7}}$$

$$= \frac{4^5 y^{12+12}}{2^3} \quad / \quad 4 = 2^2$$

$$= \frac{(2^2)^5 y^{24}}{2^3}$$

$$= \frac{2^{10} y^{24}}{2^3} = 2^7 y^{24}$$

ou

$$4^5 x^{10-3-7} y^{15+12-3} \cdot 2^{-3} = (2^2)^5 \cdot 2^{-3} x^0 y^{24}$$
$$= 2^{10-3} y^{24} = 2^7 y^{24}$$

$$\begin{aligned}
 \text{g)} \quad \left(\frac{x}{3}\right)^{-2} \div \left(\frac{x}{9}\right)^{-3} &= \left(\frac{3}{x}\right)^2 \div \left(\frac{9}{x}\right)^3 \\
 &= \frac{3^2}{x^2} \div \frac{9^3}{x^3} \\
 &= \frac{\cancel{3^2}}{x^2} \cdot \frac{x^3 \cancel{x}}{\cancel{9^3}^{g^2}} = \frac{x}{9^2} = \frac{x}{81} = \frac{x}{3^4} \\
 &= 3^{-4}x
 \end{aligned}$$

$$\begin{aligned}
 \text{h)} \quad \left(\frac{9y^3(3y^2)^{-2}}{(y^{-4})^{-3}}\right)^5 &= \frac{9^5 y^{15} (3y^2)^{-10}}{(y^{-4})^{-15}} \\
 &= \frac{9^5 y^{15} \cdot 3^{-10} y^{-20}}{y^{60}} \\
 &= \frac{(3^2)^5 y^{15} \cdot 3^{-10} y^{-20}}{y^{60}} \\
 &= 3^{10-10} y^{15-20-60} = 3^0 y^{-65} = y^{-65} \\
 &= \frac{1}{y^{65}}
 \end{aligned}$$