

R6

Ex 6

Day 3

①

$$\begin{aligned} \text{(a)} \quad \frac{27^{\frac{1}{3}} \cdot 27^{\frac{5}{3}}}{27^3} &= \frac{27^{\frac{1}{3} + \frac{5}{3}}}{27^3} = \frac{27^{\frac{6}{3}}}{27^3} \\ &= \frac{27^2}{27^3} = 27^{2-3} = 27^{-1} = \boxed{\frac{1}{27}} \end{aligned}$$


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$$\begin{aligned} \text{(b)} \quad 81^{\frac{5}{4}} \cdot 4^{-\frac{3}{2}} &= \left(81^{\frac{1}{4}}\right)^5 \cdot \frac{1}{2^{\frac{3}{2}}} \\ 3^5 \cdot \frac{1}{\left(4^{\frac{1}{2}}\right)^3} &= \frac{243}{2^3} = \boxed{\frac{243}{8}} \end{aligned}$$


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$$\begin{aligned} \text{(c)} \quad 6y^{\frac{2}{3}} \cdot 2y^{\frac{1}{2}} &= 6 \cdot 2 y^{\frac{2}{3}} y^{\frac{1}{2}} \\ &= 12 y^{\frac{2}{3} + \frac{1}{2}} \\ &= \boxed{12 y^{\frac{7}{6}}} \end{aligned}$$

$$\begin{aligned} \left(\frac{2}{2}\right)^{\frac{2}{3}} + \frac{1}{2} \left(\frac{3}{3}\right) \\ \frac{4}{6} + \frac{3}{6} \\ \frac{7}{6} \end{aligned}$$

$$\begin{aligned} \text{(d)} \quad & \left( \frac{3m^{\frac{5}{6}}}{y^{\frac{3}{4}}} \right)^2 \left( \frac{8y^3}{m^6} \right)^{\frac{2}{3}} \\ &= \left( \frac{3^2 m^{\frac{10}{6}}}{y^{\frac{6}{4}}} \right) \left( \frac{8^{\frac{2}{3}} y^{\frac{6}{3}}}{m^{\frac{12}{3}}} \right) \\ &= \frac{9 \cdot m^{\frac{5}{3}} \cdot \frac{12}{3} \cdot (8^{\frac{2}{3}})^2 \cdot y^2}{y^{\frac{3}{2}}} \end{aligned}$$

$$= 9 m^{-\frac{1}{3}} \cdot 4 \cdot y^{2 - \frac{3}{2}}$$

$$= \frac{36 y^{\frac{1}{2}}}{m^{\frac{1}{3}}}$$

$$\text{(e)} \quad m^{\frac{2}{3}} \left( m^{\frac{1}{3}} + 2m^{\frac{1}{3}} \right)$$

$$= m^{\frac{2}{3} + \frac{1}{3}} + 2m^{\frac{2}{3} + \frac{1}{3}}$$

$$= m^{\frac{3}{3}} + 2m^{\frac{3}{3}}$$

$$= \boxed{m^3 + 2m}$$