

$$5) a) \sqrt[5]{16} \cdot \sqrt[5]{2} = 16^{\frac{1}{5}} \cdot 2^{\frac{1}{5}} = (16 \cdot 2)^{\frac{1}{5}} = 32^{\frac{1}{5}} = \sqrt[5]{32} = 2$$

$$b) \frac{\sqrt[3]{27}}{\sqrt[3]{3}} = 27^{\frac{1}{3}} : 3^{\frac{1}{3}} = (27:3)^{\frac{1}{3}} = 9^{\frac{1}{3}} = \sqrt[3]{9} = 3$$

$$c) \sqrt[4]{\frac{1}{8}} \cdot \sqrt[4]{\frac{1}{2}} = \frac{1}{8}^{\frac{1}{4}} \cdot \frac{1}{2}^{\frac{1}{4}} = \left(\frac{1}{8} \cdot \frac{1}{2}\right)^{\frac{1}{4}} = \left(\frac{1}{16}\right)^{\frac{1}{4}} = \sqrt[4]{\frac{1}{16}} = \frac{1}{2}$$

$$d) \sqrt[3]{\frac{1}{9}} : \sqrt[3]{3} = \left(\frac{1}{9}\right)^{\frac{1}{3}} : 3^{\frac{1}{3}} = \left(\frac{1}{9}:3\right)^{\frac{1}{3}} = \left(\frac{1}{27}\right)^{\frac{1}{3}} = \sqrt[3]{\frac{1}{27}} = \frac{1}{3}$$

$$6) a) 2^6 \cdot 5^6 = 10^6 \quad b) 24^5 : 12^5 = 2^5$$

$$c) 8^{-2} \cdot 125^{-2} = 10^{-2} \quad d) 7^{-5} \cdot \left(\frac{1}{14}\right)^{-5} = \left(\frac{1}{2}\right)^{-5}$$

$$e) \frac{1000^{-1}}{250^{-1}} = 4^{-1} \left(\frac{1}{4}\right) \quad f) (-5)^8 \cdot (-0,4)^8 = 2^8$$

$$g) (\sqrt[3]{3})^6 \cdot (\sqrt[3]{2})^6 = 3^{\frac{6}{3}} \cdot 2^{\frac{6}{3}} = 6^3$$

$$h) \left(\frac{2}{3}\right)^{-7} \cdot \left(\frac{15}{8}\right)^{-7} \cdot \left(-\frac{4}{5}\right)^{-7} = \left(\frac{2}{3} \cdot \frac{15}{8} \cdot \left(-\frac{4}{5}\right)\right)^{-7} = (-1)^{-7}$$

$$7) a) m^3 \cdot n^3 = (mn)^3$$

$$b) (-x)^{-4} \cdot y^{-4} = (-xy)^{-4}$$

$$c) (-a)^8 \cdot (-b)^8 = (ab)^8 \quad d) (ab)^{-6} \cdot \left(\frac{1}{a}\right)^{-6} = b^{-6} \quad (a \neq 0)$$

$$e) (4x)^6 \cdot \left(\frac{1}{2}y\right)^6 = (2xy)^6 \quad f) \frac{(xy)^{-5}}{x^{-5}} = (xy:x)^{-5} = y^{-5}$$

$$g) \frac{a^6 b^8}{(2ab)^6} = \frac{a^6 b^8}{2^6 a^6 b^6} = \frac{1}{2^6} b^2 \left(\frac{b^2}{64}\right) \quad (a, b \neq 0)$$

$$h) \frac{-(4xy)^8}{(-2x)^8} = -(4xy : (-2x))^8 = -(-2y)^8 \quad x \neq 0$$

$$= -(-2)^8 y^8$$

$$= -256 y^8$$