

§ 8.7 指数の拡張

問題 8.7.1

$$(1) \quad \frac{\sqrt{a^3}}{\sqrt[3]{a^7}} = \frac{a^{\frac{3}{2}}}{a^{\frac{7}{3}}} = a^{\frac{3}{2} - \frac{7}{3}} = a^{-\frac{5}{6}} .$$

$$(2) \quad \sqrt[3]{a^2 \sqrt{a^3}} = \left(a^2 a^{\frac{3}{2}}\right)^{\frac{1}{3}} = \left(a^{2+\frac{3}{2}}\right)^{\frac{1}{3}} = \left(a^{\frac{7}{2}}\right)^{\frac{1}{3}} = a^{\frac{7}{6}} .$$

問題 8.7.2

$$(1) \quad a^3 b^2 \left(\frac{a^2}{b^{10}}\right)^{\frac{3}{5}} = a^3 b^2 \frac{a^{\frac{6}{5}}}{b^6} = \frac{a^{\frac{21}{5}}}{b^4} .$$

$$(2) \quad \frac{b^2}{a^5} (a^5 b^3)^{\frac{4}{3}} = \frac{b^2}{a^5} a^{\frac{20}{3}} b^4 = a^{\frac{5}{3}} b^6 .$$

問題 8.7.3

$$(1) \quad \frac{y^3}{x^2} (x^8 y^6)^{-\frac{3}{4}} = \frac{y^3}{x^2} x^{-6} y^{-\frac{9}{2}} = x^{-8} y^{-\frac{3}{2}} = \frac{1}{x^8 y^{\frac{3}{2}}} .$$

$$(2) \quad xy^3 \left(\frac{x^5}{y^6}\right)^{-\frac{2}{3}} = xy^3 \left(\frac{y^6}{x^5}\right)^{\frac{2}{3}} = xy^3 \frac{y^4}{x^{\frac{10}{3}}} = x^{-\frac{7}{3}} y^7 = \frac{y^7}{x^{\frac{7}{3}}} .$$