

$$1) [a^2 (a^4 a^{3/2} a^{1/3})^{1/2}]^{1/3} = a^{2/3} \cdot a^{2/3} \cdot a^{1/4} \cdot a^{1/8}$$

$$= a^{\frac{48 + 9 + 2}{36}} = a^{59/36}$$

$$2) \frac{3(2x^{-2}y^{-3})^2}{4(3a^3b^{-2})^3} \cdot \frac{8(3a^4b^{-3})^2}{9(2x^{-1}y^{-2})^3}$$

$$\frac{2 \cdot 4 \cdot x^{-4} \cdot y^{-6}}{3 \cdot 27 \cdot a^9 \cdot b^{-6}} \cdot \frac{8 \cdot a^8 \cdot b^{-6}}{9 \cdot x^{-3} \cdot y^{-6}}$$

$$= \frac{x^{-1}}{9a^1} = \frac{1}{9ax}$$

$$\frac{42}{x^{\frac{10}{5}}} \cdot \frac{x^{\frac{2 \cdot (2n+5)}{5}}}{x^{\frac{2 \cdot 2 \cdot (6-n)}{5}}}$$

$$\frac{x^{\frac{4n-6}{2n}}}{x^{\frac{2 \cdot (3-2n)}{2}}}$$

$$\frac{42}{x^{\frac{10}{5}}} \cdot \frac{x^{\frac{6-4n}{5}}}{x^{\frac{2n-3}{5}}} = \frac{x^{\frac{4n+10}{5}}}{x^{\frac{2n-4n}{5}}}$$

$$42 \cdot x^{\frac{-10+6-4n+4n+10-2n+3-2n+4n}{5}}$$

$$42 \cdot x^{\frac{2n-15}{5}} = \frac{42x^2}{5\sqrt{x^{-15}}}$$

$$a) \left(\sqrt[12]{x^6} \right)^3 = \left(x^{6/12} \right)^3 = x^{3/2} = 64 \quad \uparrow^{2/3}$$

$$x^1 = 64^{2/3} = \sqrt[3]{64^2} = 4^2 = 16$$

$$b) \left(\sqrt[3]{x} \right)^{-4} = x^{-4/3} = \frac{16}{81} \quad \uparrow^{-3/4}$$

$$x = \left(\frac{16}{81} \right)^{-3/4} = \left(\frac{81}{16} \right)^{3/4} = \sqrt[4]{\left(\frac{81}{16} \right)^3}$$

$$= \left(\frac{3}{2} \right)^3 = \frac{27}{8}$$

$$c) \sqrt{\sqrt[5]{x^4}} = x^{4/10} = x^{2/5} = \frac{25}{x^{3/5}} \quad | \cdot x^{3/5}$$

$$x^{2/5 + 3/5} = x^{10/5} = x^2 = 25 \quad | \sqrt{\quad}$$

$$x = \pm 5$$

$$\text{I } f(x) = \sqrt[3]{\frac{3}{x-2}} \quad ; \quad \mathbb{D} = \mathbb{R} \setminus \{2\}$$

$$\mathbb{K} = \mathbb{R} \setminus \{0\}$$

$$\text{II } f(x) = 3 \cdot (x^2 - 7x + 12)^{-5} = \frac{3}{(x^2 - 7x + 12)^5}$$

$$= \frac{3}{[(x-3)(x-4)]^5}$$

$$\mathbb{D} = \mathbb{R} \setminus \{3; 4\}$$

$$\mathbb{K} = \mathbb{R} \setminus \{0\}$$

