

Rationalizing Denominators

$$1. \frac{5}{\sqrt[3]{9}} \cdot \frac{5}{3\sqrt{3} \cdot 3} \cdot \frac{\sqrt[3]{3}}{\sqrt[3]{3}} = \frac{5^2 \sqrt[3]{3}}{3}$$

$$2. \frac{7}{\sqrt[3]{4x}} \cdot \frac{\sqrt[3]{2x^2}}{\sqrt[3]{2x^2}} = \frac{7\sqrt[3]{2x^2}}{2x}$$

$$3. \frac{\sqrt[5]{12}}{4\sqrt[5]{4}} \cdot \frac{\sqrt[5]{2 \cdot 2 \cdot 3}}{4\sqrt[5]{2 \cdot 2}} \cdot \frac{\sqrt[5]{2^3}}{\sqrt[5]{2^3}} = \frac{2^5 \sqrt[5]{3}}{4 \cdot 2} = \frac{5\sqrt[5]{3}}{4}$$

$$4. \frac{\sqrt[3]{10}}{\sqrt[3]{625}} \cdot \frac{\sqrt[3]{2 \cdot 5}}{5\sqrt[3]{5}} \cdot \frac{\sqrt[3]{5^2}}{\sqrt[3]{5^2}} = \frac{5^3 \sqrt[3]{2}}{25} = \frac{3\sqrt[3]{2}}{5}$$

$$5. \frac{\sqrt[5]{2}}{3\sqrt[5]{162}} \cdot \frac{\sqrt[5]{2}}{3\sqrt[5]{2 \cdot 3^4}} \cdot \frac{\sqrt[5]{2^4 \cdot 3}}{\sqrt[5]{2^4 \cdot 3}} = \frac{2^5 \sqrt[5]{3}}{3 \cdot 2 \cdot 3} = \frac{\sqrt[5]{3}}{9}$$

$$6. \frac{3^4 \sqrt[4]{4}}{2^4 \sqrt[4]{8}} \cdot \frac{3\sqrt[4]{2 \cdot 2}}{2^2 \sqrt[4]{2 \cdot 2}} \cdot \frac{\sqrt[4]{2}}{\sqrt[4]{2}} = \frac{3^4 \sqrt[4]{8}}{2 \cdot 2} = \frac{3^4 \sqrt[4]{8}}{4}$$

$$7. \frac{\sqrt[4]{5}}{4\sqrt[4]{27}} \cdot \frac{4\sqrt[4]{5}}{4\sqrt[4]{3 \cdot 3 \cdot 3}} = \frac{\sqrt[4]{3}}{\sqrt[4]{3}} = \frac{4\sqrt[4]{15}}{4 \cdot 3} = \frac{4\sqrt[4]{15}}{12}$$

$$8. \frac{\sqrt[3]{10}}{\sqrt[3]{32}} \cdot \frac{\sqrt[3]{2 \cdot 5}}{2^3 \sqrt[3]{2 \cdot 2}} \cdot \frac{\sqrt[3]{2}}{\sqrt[3]{2}} = \frac{\sqrt[3]{20}}{4}$$

$$9. \frac{-5 + 5\sqrt[4]{5}}{3\sqrt[4]{6}} \cdot \frac{\sqrt[4]{6 \cdot 6 \cdot 6}}{\sqrt[4]{6 \cdot 6 \cdot 6}} = \frac{-5^4 \sqrt[4]{216} + 5^4 \sqrt[4]{1080}}{3 \cdot 6} = \frac{-5^4 \sqrt[4]{216} + 5^4 \sqrt[4]{1080}}{18}$$

$$10. \frac{3 + \sqrt[3]{3}}{\sqrt[3]{9}} \cdot \frac{3 + \sqrt[3]{3}}{3\sqrt[3]{3} \cdot 3} \cdot \frac{\sqrt[3]{3}}{\sqrt[3]{3}} = \frac{3\sqrt[3]{3} + \sqrt[3]{9}}{3}$$