2.4 Rationalizing Higher Order Radicals

Ex 1) Simplify.

$\frac{\sqrt[3]{25}}{\sqrt[3]{4}}$ $\frac{\sqrt[3]{25}}{\sqrt[3]{2\cdot 2}} \cdot \frac{\sqrt[3]{2}}{\sqrt[3]{2}}$

4
2 2

$= \boxed{\frac{\sqrt[3]{50}}{2}}$

50
5 10
5 2

$\frac{\sqrt[4]{5}}{\sqrt[4]{72}}$ $\frac{\sqrt[4]{5}}{\sqrt[4]{3\cdot 3\cdot 2\cdot 2\cdot 2}} \cdot \frac{\sqrt[4]{3\cdot 3\cdot 2}}{\sqrt[4]{3\cdot 3\cdot 2}}$

72
9 8
3 3 2 2 2

$= \frac{\sqrt[4]{90}}{3\cdot 2} = \boxed{\frac{\sqrt[4]{90}}{6}}$

$\frac{\sqrt[3]{2}}{\sqrt[3]{16}}$

16
8 2
2 2 2

$\frac{\sqrt[3]{2}}{\sqrt[3]{2\cdot 2\cdot 2\cdot 2}} \cdot \frac{\sqrt[3]{2\cdot 2}}{\sqrt[3]{2\cdot 2}}$

$= \frac{\sqrt[3]{8}}{2\cdot 2} = \frac{2}{4} = \boxed{\frac{1}{2}}$

$\frac{3}{\sqrt[4]{9}}$ $\frac{3}{\sqrt[4]{3\cdot 3}} \cdot \frac{\sqrt[4]{3\cdot 3}}{\sqrt[4]{3\cdot 3}}$

$= \frac{3\sqrt[4]{9}}{3} = \boxed{\sqrt[4]{9}}$