

① Solve:  $x^4 = 81$

$$x = \pm \sqrt[4]{81}$$

$$x = \pm 3$$

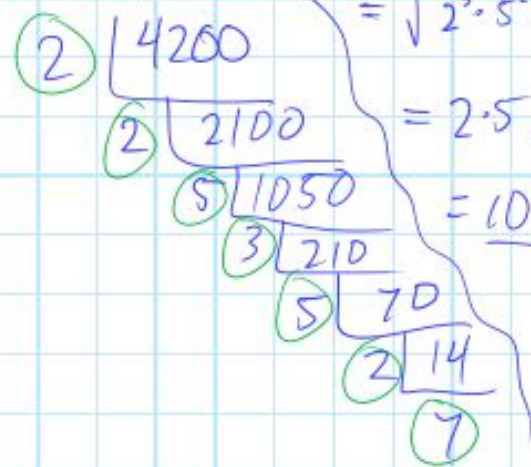
$$x^3 = -64$$

$$x = \sqrt[3]{-64}$$

$$x = -4$$

② Simplify:  $\sqrt{4200}$

(a, b ≥ 0)



$$= \sqrt{2^3 \cdot 5^2 \cdot 3 \cdot 7}$$

$$= 2 \cdot 5 \sqrt{2 \cdot 3 \cdot 7}$$

$$= 10\sqrt{42}$$

$$\sqrt[3]{\frac{162a^2}{b^4}}$$

$$= \frac{\sqrt[3]{162 \cdot \sqrt[3]{a^2}}}{\sqrt[3]{b^4}}$$

$$= \frac{\sqrt[3]{2 \cdot 3^4 \cdot \sqrt[3]{a^2}}}{\sqrt[3]{b^3 \cdot b}} = \frac{3 \sqrt[3]{6} \cdot \sqrt[3]{a^2}}{b \sqrt[3]{b}}$$



$$= \frac{3}{b} \sqrt[3]{\frac{6a^2}{b}}$$

$$\frac{\sqrt[3]{32a^3b^4}}{\sqrt[3]{2ab^7}}$$

$$= \frac{2ab \sqrt[3]{4b}}{b^2 \sqrt[3]{2ab}}$$

$$= \frac{2a}{b} \sqrt[3]{\frac{4b}{2ab}}$$

$$= \frac{2a}{b} \sqrt[3]{\frac{2}{a}} = \frac{2}{b} \sqrt[3]{2a^2}$$

③ Convert to Entire radical :  $-\frac{x^3}{8} \sqrt[3]{y^2}$

$$= \sqrt[3]{\left(\frac{-x^3}{8}\right)^3 y^2} = \sqrt[3]{-\frac{x^9 y^2}{512}}$$

④ Explain why  $\sqrt{x^4 y^2} = x^2 \cdot |y|$  needs an absolute value on  $y$  but not  $x$

$$\sqrt{y^2} = |y| \quad \text{b/c } \overset{y=-2}{\sqrt{(-2)^2}} = \sqrt{4} = \underline{2} \quad \begin{matrix} x^2 \text{ always} \\ (+) \end{matrix}$$

$$\sqrt{x^4} = \sqrt{x^2} \cdot \sqrt{x^2} = |x| \cdot |x| = \underline{|x|^2} = x^2$$

$$|x|^2 = x^2 \quad \text{but} \quad |y| \neq y$$