$\sqrt[2]{25} = 5$

$\boxed{5} \cdot \boxed{5} = 25$

$\sqrt[3]{8} = 2$

$\boxed{2} \cdot \boxed{2} \cdot \boxed{2} = 8$

$\sqrt[3]{-8} = -2$

$\boxed{-2} \cdot \boxed{-2} \cdot \boxed{-2} = -8$

$\sqrt[2]{-25}$ = no Solution

$\boxed{-5} \cdot \boxed{-5} = 25$

$\boxed{5} \cdot \boxed{5} = 25$

$\sqrt{8} \rightarrow \sqrt{4 \cdot 2} \rightarrow \boxed{2\sqrt{2}}$

$\sqrt[3]{40}$

$\downarrow$

$\sqrt[3]{5 \cdot 8} \rightarrow \boxed{2\sqrt[3]{5}}$

$\sqrt[3]{40} \rightarrow \sqrt[3]{2 \cdot 20}$

$\downarrow$

$\sqrt[3]{2 \cdot 2 \cdot 10}$

$\downarrow$

$\sqrt[3]{\underbrace{2 \cdot 2 \cdot 2}_{\text{triple of 2}} \cdot 5} \rightarrow \boxed{2\sqrt[3]{5}}$

$$\sqrt[c]{a^b} = a^{b/c}$$

$$8^{1/3} = \sqrt[3]{8^1}$$

$$\hookrightarrow = 2$$

$$8^{2/3} = \sqrt[3]{8^2} \rightarrow \sqrt[3]{64} = \boxed{4}$$

$4 \cdot 4 \cdot 4 = 64$

$$\sqrt[3]{8 \cdot 8 \cdot 1}$$

$$\downarrow \downarrow \downarrow$$

$$(2)(2)(1) = \boxed{4}$$

$$\hookrightarrow (8^{1/3})^2 = \left(\sqrt[3]{8}\right)^2$$

$$= (2)^2 = \boxed{4}$$

$$\sqrt[2]{24x^3y^4z^5}$$

$$(24x^3y^4z^5)^{1/2} = (24)^{1/2}(x^3)^{1/2}(y^4)^{1/2}(z^5)^{1/2}$$

$$(24^{1/2})(x^{3/2})(y^2)(z^{5/2})$$

$$\sqrt{24^1}$$

$$(\sqrt{4\cdot 6})(x^{1+1/2})(y^2)(z^{2+\frac{1}{2}})$$

$$(2\sqrt{6})(x^1 \cdot x^{1/2})(y^2)(z^2 \cdot z^{1/2})$$

$$\boxed{2\sqrt{6} \quad x \quad \sqrt{x} \quad y^2 \quad z^2 \quad \sqrt{z}}$$

$$2\sqrt{6}\, x\sqrt{x}\, y^2 z^2\sqrt{z}$$

$1 + \frac{1}{2} = \frac{3}{2}$

$\frac{3}{2} = 1\frac{1}{2}$

$\frac{5}{2} = 2\frac{1}{2}$

$2 + \frac{1}{2} = \frac{5}{2}$

$$\sqrt{9u^7v^2z}$$

$$(9^1u^7v^2z^1)^{1/2} = (9^1)^{1/2}(u^7)^{1/2}(v^2)^{1/2}(z^1)^{1/2}$$

$$9^{1/2} \quad u^{7/2} \quad v^1 \quad z^{1/2}$$

$$\sqrt{9} \quad (u^{3+\frac{1}{2}}) \quad v \quad \sqrt{z}$$

$$3 \quad (u^3 \cdot u^{1/2}) \quad v \quad \sqrt{z}$$

$$3 \quad u^3 \quad \sqrt{u} \quad v \quad \sqrt{z}$$

$$\boxed{3\,u^3 v\sqrt{uz}}$$

$3 + \frac{1}{2} = \frac{7}{2}$

$\frac{7}{2} = 3\frac{1}{2}$