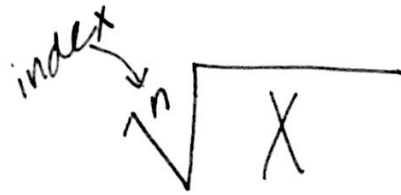


Radicals



* Simplify - factor tree

* Multiplying - $a\sqrt[n]{b} \cdot c\sqrt[n]{d} = (a \cdot c)\sqrt[n]{(b \cdot d)}$

* Add/subtract - $a\sqrt[n]{b} + c\sqrt[n]{b}$
(simplify first!)
have to be equal

Simplify:

① $\sqrt[3]{64} = 2 \cdot 2 = \boxed{4}$



② $\sqrt[3]{24m^5n^8}$
6 4 \rightarrow (m.m.m)m.m
 $\boxed{3 \ 2 \ 2 \ 2}$

$2m^1n^2 \sqrt[3]{3m^2n^2}$

$\boxed{2mn^2 \sqrt[3]{3m^2n^2}}$

③ $\sqrt{48x^6y^7}$



$2 \cdot 2x^3y^3 \sqrt{3y^2}$

$\boxed{4x^3y^3 \sqrt{3y}}$

Multiplication

Multiplying:

$$\textcircled{1} \sqrt{3x^2y} \cdot \sqrt{5xy}$$

$$\sqrt{15x^3y^2}$$

^
3 5

$$x^1 y^1 \sqrt{15x} = \boxed{xy\sqrt{15x}}$$

$$\textcircled{2} 6\sqrt{8x^3y^2} \cdot 2\sqrt{10xy^3}$$

$$12\sqrt{80x^4y^5}$$

^
10 8

$$\boxed{5} \cdot \boxed{2} \cdot \boxed{2} \cdot \boxed{2} \cdot \boxed{2} \cdot \boxed{2}$$

$$12 \cdot 2 \cdot 2 \cdot x^2 y^2 \sqrt{5y}$$

$$\boxed{48x^2y^2\sqrt{5y}}$$

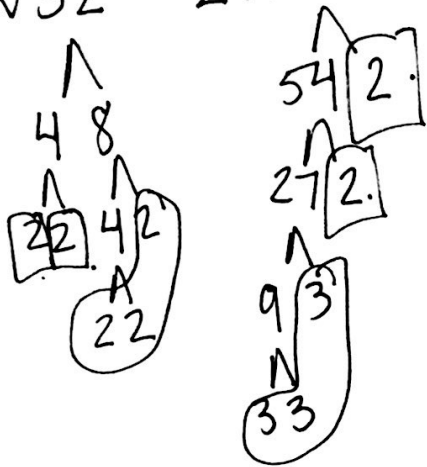
Add / Subtract:

$$4x - 3x = x$$

① $4\sqrt{2x} - 3\sqrt{2x}$

$$\begin{array}{c} \sqrt{2x} \\ \boxed{\sqrt{2x}} \end{array}$$

② $5\sqrt[3]{32} - 2\sqrt[3]{108}$



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

$$10\sqrt[3]{4} - 6\sqrt[3]{4}$$

$$\boxed{4\sqrt[3]{4}}$$