$$x^3 \cdot x^4 = x^{3+4} = x^7$$

$$\frac{x^9}{x^5} = x^4$$

$$(x^3)^5 = x^{15}$$

$$\left(\frac{1}{3}\right)^3 = \frac{1^3}{3^3} = \frac{1}{27}$$

$$(x^2 y^3)^4 = x^8 y^{12}$$

$$\frac{x^5}{x^9} = \frac{1}{x^4}$$

#1 -

$$(3x^3y^4)(4xy^5)$$

$$12x^4y^9$$

b. $(2a^2b^3c)^4$

$16a^8b^{12}c^4$

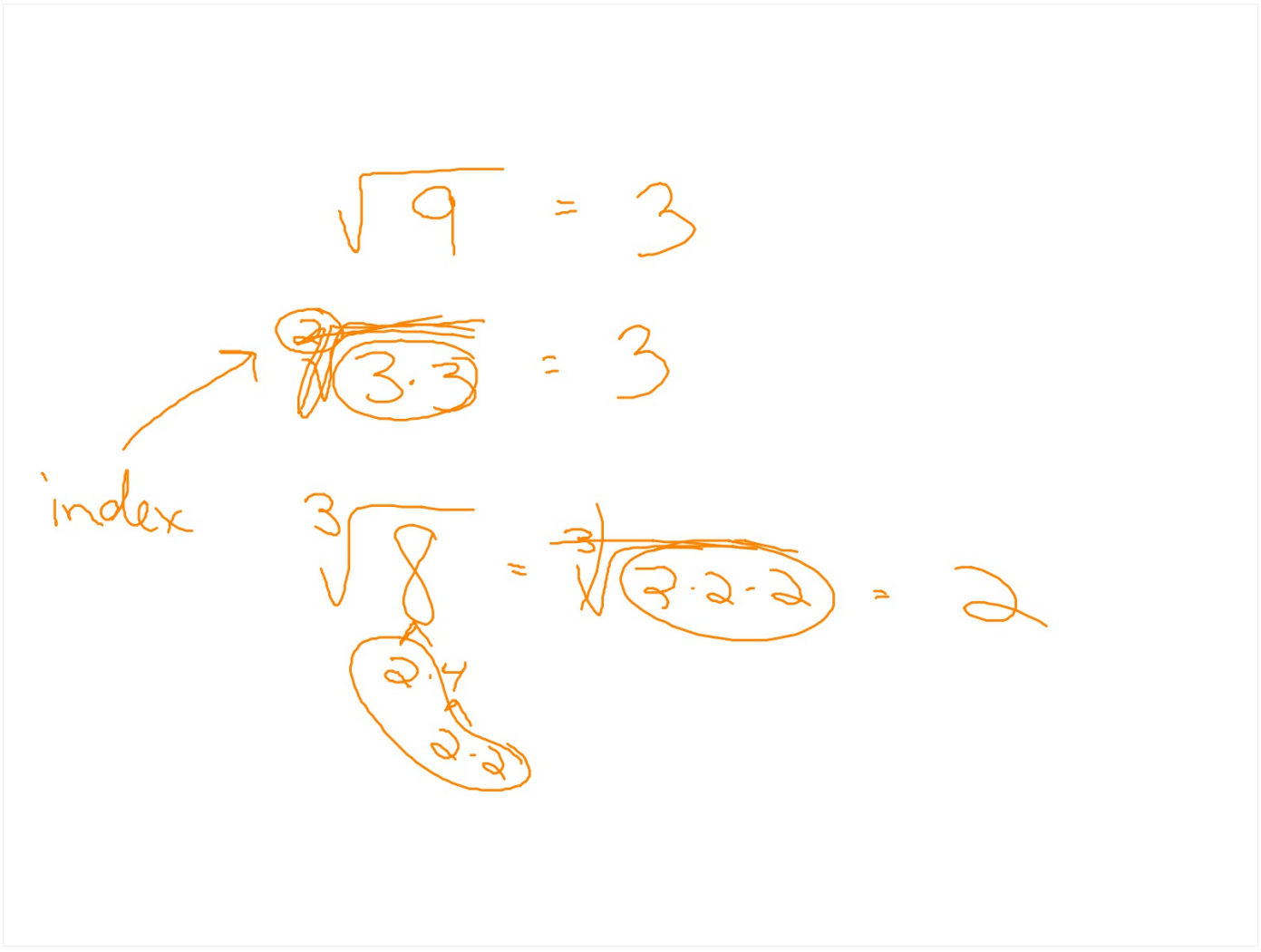
c. $\left(\frac{2r^3}{s}\right)^2\left(\frac{s}{r^3}\right)^3$

$\left(\frac{4\cancel{r^6}}{\cancel{s^2}}\right)\left(\frac{\cancel{s^3}}{\cancel{r^3}}\right) = \frac{4s}{r^3}$

d. $(u^{-2}v^3)^{-3}$

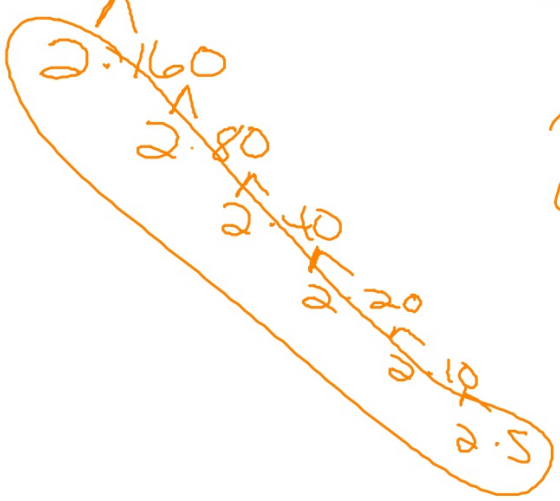
u^6v^{-9}

$\frac{u^6}{v^9}$


$\sqrt{9} = 3$
$\sqrt{3 \cdot 3} = 3$
index
$\sqrt[3]{8} = \sqrt[3]{2 \cdot 2 \cdot 2} = 2$
$2 \cdot 4$
$2 \cdot 2$

#3 –

a. $\sqrt[3]{320} = \sqrt[3]{2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 5}$



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

$4\sqrt[3]{5}$

3c.

$\sqrt{3a^2b^3}\sqrt{6a^5b}$

$\sqrt{a \cdot a \cdot a \cdot a \cdot a \cdot a \cdot a}$

$\sqrt{18a^7b^4}$

$3\sqrt{2a}$

$3\sqrt{2a^7b^4}$

$3a^3b^2\sqrt{2a}$

#4 - Rationalize the Denominator

a. $\frac{1}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{\sqrt{5}}{\sqrt{25}} = \frac{\sqrt{5}}{5}$

b. $\frac{1}{\sqrt[3]{x}} \cdot \frac{\sqrt[3]{x^2}}{\sqrt[3]{x^2}} = \frac{\sqrt[3]{x^2}}{x}$

$\sqrt[3]{8}$

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

$\sqrt[3]{x^3}$

$\sqrt[3]{x \cdot x \cdot x}$

c. $\sqrt{\frac{2}{3}} = \frac{\sqrt{2}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{6}}{3}$

$\sqrt{9}$