

1) Express each of a radical then evaluate
 $(3125)^{\frac{2}{5}}$

2) Express each as a power But don't evaluate
a) $\sqrt[7]{624}^3$

3) Entire to Mix
a) $\sqrt{243}$

b) $\sqrt[3]{432}$

4) Mixed to Entire
 $4\sqrt[5]{2}$

Which are a rational #

$$\sqrt{50}, \sqrt{\frac{9}{64}}, \sqrt[3]{-21}, \sqrt{6.4}$$

Evaluate $\left(\frac{81}{25}\right)^{3/2}$

Evaluate $27^{-4/3}$

Evaluate $\left(\frac{32}{243}\right)^{1/5}$

Simplify using laws of exponents

$$1) \left(\frac{3}{4} a^7 b^4 \right)^2$$

$$2) \left(\frac{5a^5}{x^7} \right)^{-4}$$

$$3) \left(\frac{x^6 y^8 z^2}{x^8 y^9 z^2} \right)^5$$

$$4) \frac{(4x^4y^3)(3x^2y)^2}{2x^{-4}y^7}$$

1) Express each of a radical then evaluate

$$(3125)^{\frac{2}{5}} = \sqrt[5]{3125}^2 = 5^2 = 25$$

2) Express each as a power But don't evaluate

$$a) \sqrt[7]{624}^3 = 624^{\frac{3}{7}}$$

3) Entire to Mix

$$a) \sqrt{243}$$

→ look in perfect square list and find # that divides into 243

$$\begin{aligned} &= \sqrt{81 \times 3} \\ &= \sqrt{81} \times \sqrt{3} \\ &= 9\sqrt{3} \end{aligned}$$

$$b) \sqrt[3]{432}$$

→ look in perfect cube list and find the largest perfect cube # that divides into 432

$$\begin{aligned} &= \sqrt[3]{216 \times 2} \\ &= \sqrt[3]{216} \times \sqrt[3]{2} \\ &= 6\sqrt[3]{2} \end{aligned}$$

4) Mixed to Entire

$$4\sqrt[5]{2}$$

$$= \sqrt[5]{4^5 \times 2}$$

$$= \sqrt[5]{1024 \times 2}$$

$$= \sqrt[5]{2048}$$

Which are a rational #

$\sqrt{50}$ (No), $\sqrt{\frac{9}{64}}$ (Yes), $\sqrt[3]{-21}$ (No)

$\sqrt{6.4}$ (No), $\sqrt{\frac{64}{10}}$ (Yes)

Is it in the list

Evaluate $\left(\frac{81}{25}\right)^{3/2} = \frac{81^{3/2}}{25^{3/2}} = \frac{(\sqrt{81})^3}{(\sqrt{25})^3} = \frac{(9)^3}{(5)^3} = \frac{729}{125}$

Evaluate $\frac{27^{-4/3}}{1} = \frac{1}{27^{4/3}} = \frac{1}{(\sqrt[3]{27})^4} = \frac{1}{3^4} = \frac{1}{81}$

Evaluate $\left(\frac{32}{243}\right)^{1/5} = \frac{32^{1/5}}{243^{1/5}} = \frac{\sqrt[5]{32}}{\sqrt[5]{243}} = \frac{5}{3}$

Simplify using laws of exponents

$$1) \left(\frac{3 a^7 b^4}{4} \right)^{-2}$$

$$= \frac{3^{-2} a^{14} b^{-8}}{4^{-2}}$$

$$= \frac{4^2 a^{14}}{3^2 b^8}$$

$$= \frac{16 a^{14}}{9 b^8}$$

$$3) \left(\frac{x^6 y^{11} z^2}{x^8 y^9 z^2} \right)^5$$

divide like powers so subtract

$$\left(x^{-2} y^2 z^0 \right)^5$$

$$= x^{-10} y^{10} z^0$$

this is (1)

$$= \frac{y^{10}}{x^{10}}$$

$$2) \left(\frac{5 a^5}{x^7} \right)^{-4}$$

$$= \frac{5^{-4} a^{-20}}{x^{-28}}$$

$$= \frac{x^{28}}{5^4 a^{20}} = \frac{x^{28}}{625 a^{20}}$$

$$4) \frac{(4 x^4 y^3) (3 x^5 y)^2}{2 x^{-4} y^7}$$

$$= \frac{4 x^4 y^3 \cdot 3^2 x^{10} y^2}{2 x^{-4} y^7}$$

$$= \frac{4 \cdot 3^2 x^4 x^{10} y^3 y^2}{2 x^{-4} y^7}$$

$$= \frac{4 \cdot 9 x^{14} y^5}{2 x^{-4} y^7}$$

$$= \frac{36 x^{14} y^5}{2 x^{-4} y^7}$$

$$= 18 x^{14-4} y^{5-7}$$

$$= 18 x^{10} y^{-2}$$

$$= \frac{18 x^{10}}{y^2}$$