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 #

$\sqrt{50}$, $\sqrt{\frac{9}{64}}$, $\sqrt[3]{-21}$, $\sqrt{6 \cdot 4}$

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

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

1) Express each of a radical then evaluate

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

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

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

3) Entire to Mix

a) $\sqrt{243}$

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

$= \sqrt{81 \times 3}$

$= \sqrt{81} \times \sqrt{3}$

$= 9\sqrt{3}$

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

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

$= \sqrt[3]{216 \times 2}$

$= \sqrt[3]{216} \times \sqrt[3]{2}$

$= 6\sqrt[3]{2}$

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 #

$\sqrt{50}$, $\sqrt{\frac{9}{64}}$, $\sqrt[3]{-21}$, $\sqrt{6 \cdot 4}$

$\sqrt{50}$ NO

$\sqrt{\frac{9}{64}}$ Yes, $\frac{\sqrt{9}}{\sqrt{64}} = \frac{3}{8}$

$\sqrt[3]{-21}$ No

$\sqrt{6 \cdot 4}$ No, $\frac{\sqrt{64}}{\sqrt{10}}$ yes, NO

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 $\frac{27}{1}^{-4/3}$

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

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

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

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

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

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

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

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

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

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

$= x^{-10} y^{10} z^0$ this is (1)

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

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

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

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

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

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

$= 18 \; x^{14-(-4)} \; y^{5-7}$

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

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