

$$\begin{aligned} & 36^{0.5} \\ &= 36^{\frac{1}{2}} \\ &= \left(\sqrt[2]{36} \right)^1 \\ &= \sqrt{36} \\ &= 6 \end{aligned}$$

$$\begin{aligned} & 32^{0.2} \\ &= 32^{\frac{1}{5}} \\ &= \left(\sqrt[5]{32} \right)^1 \\ &= \sqrt[5]{32} \\ &= 2 \end{aligned}$$

$$\begin{aligned} & 81^{3/4} \\ &= \left(\sqrt[4]{81} \right)^3 \\ &= (3)^3 \\ &= 27 \end{aligned}$$

$$\boxed{x \sqrt{\quad}}$$

or

$$\boxed{x \sqrt{y}}$$

$$25^{-3/2}$$

$$= \left(\frac{1}{25}\right)^{3/2}$$

$$= \frac{1^{3/2}}{25^{3/2}}$$

$$= \frac{(\sqrt{1})^3}{(\sqrt{25})^3}$$

$$= \frac{(1)^3}{(5)^3}$$

$$= \frac{1}{125}$$

$$\left(\frac{36}{49}\right)^{-0.5}$$

$$= \left(\frac{49}{36}\right)^{0.5}$$

$$= \left(\frac{49}{36}\right)^{1/2}$$

$$= \frac{49^{1/2}}{36^{1/2}}$$

$$= \frac{\sqrt{49}}{\sqrt{36}}$$

$$= \frac{7}{6}$$

$$\left(\frac{27}{64}\right)^{-2/3}$$

$$= \left(\frac{64}{27}\right)^{2/3}$$

$$= \frac{(64)^{2/3}}{(27)^{2/3}}$$

$$= \frac{(\sqrt[3]{64})^2}{(\sqrt[3]{27})^2}$$

$$= \frac{(4)^2}{(3)^2}$$

$$= \frac{16}{9}$$

Write as a radical

a) $25^{3/2}$

$$\left(\sqrt{25}\right)^3$$

b) $27^{1/3}$

$$\left(\sqrt[3]{27}\right)$$

Write as a power

$$\left(\sqrt[5]{x}\right)^9$$
$$= x^{9/5}$$

$$\sqrt[3]{(5)^4}$$
$$= 5^{4/3}$$

Exponent Laws

Product of powers: $a^m \cdot a^n = a^{m+n}$

Quotient of powers: $a^m \div a^n = a^{m-n}, a \neq 0$

Power of a power: $(a^m)^n = a^{mn}$

Power of a product: $(ab)^m = a^m b^m$

Power of a quotient: $\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}, b \neq 0$

$$\frac{10c^8d^{-2}}{2c^4d^5}$$

$$= 5c^{8-4}d^{-2-5}$$

$$= 5c^4d^{-7}$$

$$= \frac{5c^4}{d^7}$$

$$\frac{(4d^3c^{-3})(3d^6c^7)}{(2d^3c)^2}$$

$$= \frac{12d^{3+6}c^{-3+7}}{2^1 \cdot 2^3 d^3 \cdot 2^1 c^2}$$

$$= \frac{12d^9c^4}{2^2 d^6 c^2}$$

$$= \frac{12d^9c^4}{4d^6c^2}$$

$$= 3d^{9-6}c^{4-2}$$

$$= 3d^3c^2$$

Entire to Mixed:

$$\sqrt{20}$$
$$\sqrt{2 \cdot 2 \cdot 5}$$

$$2\sqrt{5}$$

$$\sqrt[3]{54}$$
$$\sqrt[3]{2 \cdot 3 \cdot 3 \cdot 3}$$

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

Mixed to Entire

$$5\sqrt{3}$$

$$\sqrt{5 \cdot 5 \cdot 3}$$

$$\sqrt{75}$$