

EXP

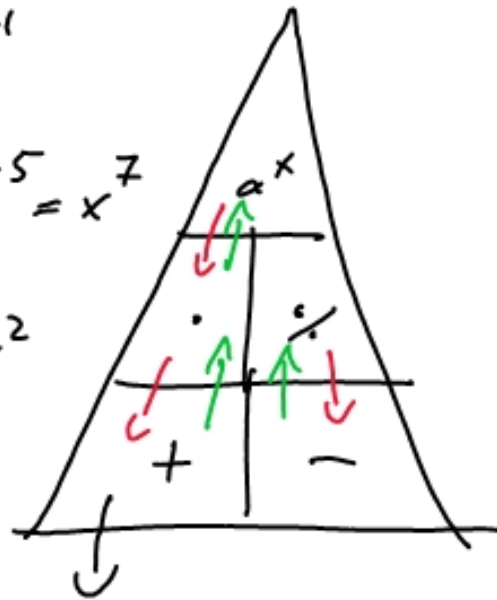
EXP / LOG

$$(x^3)^4 = x^{3 \cdot 4}$$

$$x^2 \cdot x^5 = x^{2+5} = x^7$$

$$\frac{x^5}{x^3} = x^{5-3} = x^2$$

$$x^3 + x^2$$



$$a \cdot \log b = \log b^a$$

$$\log a - \log b = \log \frac{a}{b}$$

$$\log a + \log b = \log a \cdot b$$

LOG

$$\frac{\log b}{a} = \frac{1}{a} \cdot \log b$$

$$= \log b^{1/a}$$

$$= \log \sqrt[a]{b}$$

$$\log a \cdot \log b$$

$$= \log b^{\log a}$$

$$= \log a^{\log b}$$

$$\begin{array}{l}
 x^\alpha \begin{array}{l} \nearrow \\ \rightarrow \\ \searrow \end{array} \begin{array}{l} \alpha \in \mathbb{N} \\ \alpha = a/b \\ -\alpha \end{array} \begin{array}{l} \rightarrow x^\alpha \\ \rightarrow \sqrt[b]{x^a} \\ \rightarrow \frac{1}{x^\alpha} \end{array} \quad \begin{array}{l} x^2 = x^2 \\ x^{3/4} = \sqrt[4]{x^3} = \sqrt{\sqrt{x^3}} \\ x^{-3} = \frac{1}{x^3} \end{array}
 \end{array}$$

$$\left( \sqrt[3]{\sqrt{x^5}} \right)' = \left[ \sqrt{x^5} \right]^{1/3} = \left[ (x^5)^{1/2} \right]^{1/3} = x^{5/6}$$

$$\frac{5}{6} \cdot x^{-1/6} = \frac{5}{6 \cdot \sqrt[6]{x}}$$

$$\hookrightarrow (x^{1/6})^{-1} = \left( \sqrt[6]{x} \right)^{-1} = \frac{1}{\sqrt[6]{x}}$$

$$\frac{\sqrt[3]{x^2 \cdot \sqrt{x}}}{x^4 \cdot \sqrt[5]{\sqrt[3]{x^4}}} = \frac{[x^2 \cdot x^{1/2}]^{1/3}}{x^4 \cdot ((x^4)^{1/3})^{1/5}}$$

$$\frac{(x^{5/2})^{1/3}}{x^4 \cdot x^{4/15}} = \frac{x^{5/6}}{x^{64/15}} = x^{\frac{25}{30} - \frac{128}{30}} = x^{-\frac{103}{30}}$$

$$= \frac{1}{\sqrt[30]{x^{103}}}$$

$$1) \left( \sqrt{x^4 + x^2} \right)^3 = (x^2 + x^1)^{3/2}$$

$$\sqrt{16+25} = 4+5=9$$

$$\frac{\sqrt{41}}{\sqrt{41}} \rightarrow$$

$$\frac{x^3 + 5}{(x+3)^2 \neq x^2 + 9}$$

$$2) \frac{(x^3)^2 \cdot \sqrt[3]{x^2} \rightarrow \text{XII}}{(x^{-4})^2 \cdot \sqrt{(x^3)^1}}$$

$$\frac{x^6 \cdot ((x^{12})^{1/3})^{1/2}}{x^{-8} \cdot (x^3)^{1/2}} = \frac{x^6 \cdot x^{12/6}}{x^{-8} \cdot x^{3/2}}$$

$$= x^6 \cdot x^2 \cdot x^8 \cdot x^{-3/2}$$

$$6+2+8-3/2 = x^{29/2} = \sqrt{x^{29}}$$

$$i^2 = -1$$

$$(\sqrt{-1})^2 = (-1^{1/2})^2 = (-1)^{\frac{1}{2} \cdot \frac{2}{1}} = -1$$