

$$3) a) 3 - \frac{1}{2} \cdot (2 + \frac{1}{10}) - \frac{3}{10} + \frac{1}{10} (\frac{3}{2} - 1) + 1,3 \quad \downarrow$$

$$3 - \frac{1}{2} \cdot (2 + \frac{1}{10}) - \frac{3}{10} + \frac{1}{10} \cdot \frac{1}{2} + \frac{13}{10}$$

$$3 - 1 - \frac{1}{20} - \frac{3}{10} + \frac{1}{20} + \frac{13}{10}$$

$$2 - \frac{3}{10} + \frac{13}{10} = 3$$

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

$$5) \frac{\frac{x}{y} - \frac{1}{1} + \frac{y}{4x}}{\frac{1}{4xy} - \frac{1}{8x^2}} = \frac{\frac{4x^2 - 4xy + y^2}{4xy}}{\frac{2x - y}{8x^2y}}$$

$$\frac{(2x-y)^2}{4xy} \cdot \frac{8x^2y}{2x-y} = (2x-y) \cdot 2x$$

$$= 4x^2 - 2xy$$

Potenz x^n

$$(x^2)^3 = x^{2 \cdot 3}$$

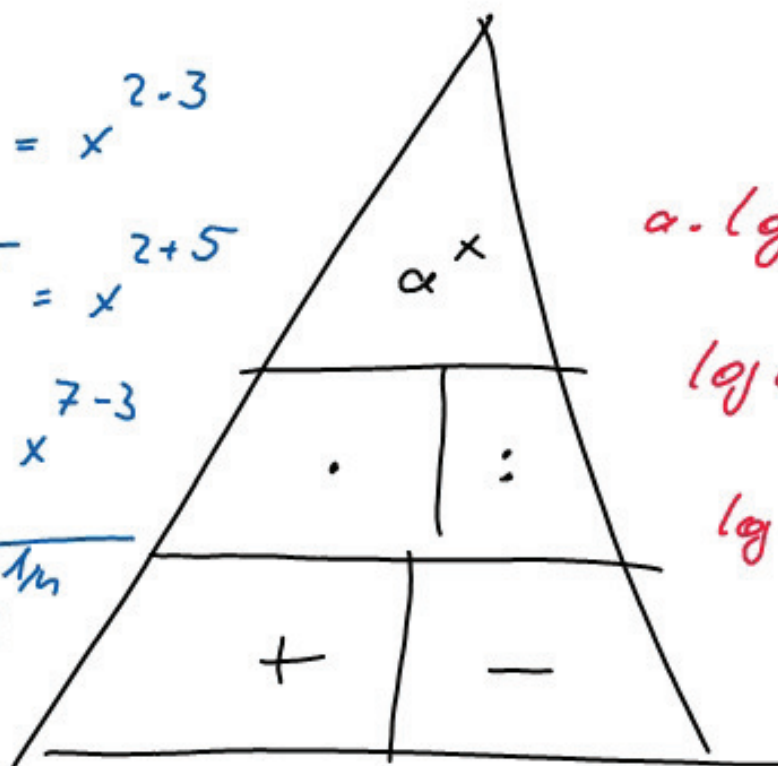
$$x^2 \cdot x^5 = x^{2+5}$$

$$x^7 : x^3 = x^{7-3}$$

$$\sqrt[n]{x} = x^{1/n}$$

$$x^{-n} = \frac{1}{x^n}$$

$$x^2 + x^3$$



Log

$$a \cdot \lg b = \lg b^a$$

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

$$\lg a + \lg b = \lg (a \cdot b)$$

$$\sqrt[4]{x^6 \cdot \sqrt[3]{\frac{1}{x^4} \cdot x^5 \cdot \sqrt{x^3}}}$$

$$\left(x^6 \cdot \left(x^{-4} \cdot x^5 \cdot x^{3/2} \right)^{1/3} \right)^{1/4}$$

$$\left(x^6 \cdot \left(x^{5/2} \right)^{1/3} \right)^{1/4} = \left(x^6 \cdot x^{5/6} \right)^{1/4}$$

$$\left(x^{41/6} \right)^{1/4} = x^{41/24} = \sqrt[24]{x^{41}}$$

$$\sqrt[3]{x^2} = \left(\sqrt[3]{x^1} \right)^2 \quad \Leftrightarrow \quad (x^2)^{1/3} = (x^{1/3})^2$$

$$x^{2 \cdot 1/3} = x^{1/3 \cdot 2} \quad \checkmark$$

$$f(x) = \sqrt{x^1} = x^{1/2}$$

$$\begin{aligned} f'(x) &= \frac{1}{2\sqrt{x^1}} = \frac{1}{2} \cdot x^{1/2-1} = \frac{1}{2} \cdot x^{-1/2} \\ &= \frac{1}{2} \cdot \frac{1}{x^{1/2}} = \frac{1}{2} \cdot \frac{1}{\sqrt{x^1}} \end{aligned}$$

$$\frac{3k \sqrt{x^{2k+3}}}{3 \sqrt{k \sqrt{x^{4k-5}}}} : \left(\frac{6k \sqrt{(x^{1-k})^4}}{6k} \right)^{\frac{1}{2}}$$

$$\frac{x \frac{2k+3}{3k}}{x \frac{4k-5}{3k}} : x \frac{\frac{8}{16} \cdot (1-k)}{\frac{6k}{3k}}$$

$$x \frac{(2k+3) - (4k-5) - 8 \cdot (1-k)}{3k} = x \frac{6k}{3k} = x^2$$