

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

$$3 - 1 - \frac{1}{2} - \frac{3}{10} + \frac{1}{2} + \frac{3}{10}$$

$$3 - \frac{3}{10} + \frac{3}{10} - 1 = 3 \frac{(2x-y)^2}{4x^2 - 4xy + y^2}$$

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

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

Potenz x^a

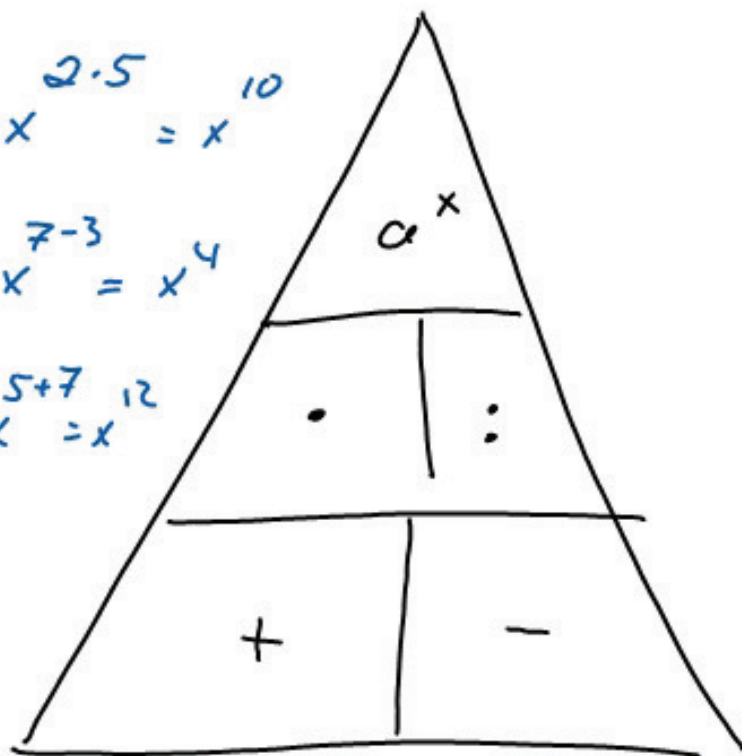
$$(x^2)^5 = x^{2 \cdot 5} = x^{10}$$

$$x^7 : x^3 = x^{7-3} = x^4$$

$$x^7 \cdot x^5 = x^{5+7} = x^{12}$$

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

$$\sqrt[n]{x^m} = x^{\frac{m}{n}}$$



$$\sqrt[3]{\frac{1}{x^2} \cdot \sqrt{x^3 \cdot x^2 \cdot \sqrt{x}}} = \left[x^{-2} \left(x^{2\frac{1}{4}} \right)^{\frac{1}{2}} \right]^{\frac{1}{3}}$$

$$\left(x^{-2} \cdot x^{2\frac{1}{8}} \right)^{\frac{1}{3}} = \left(x^{-\frac{16}{8} + \frac{2}{8}} \right)^{\frac{1}{3}} = x^{\frac{5}{24}}$$

$$\sqrt{x} = x^{\frac{1}{2}} = \sqrt[24]{x^{12}}$$

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

$$f'(x) = \frac{1}{2\sqrt{x}} = \frac{1}{2} \cdot x^{\frac{1}{2}-1} = \frac{1}{2} x^{-\frac{1}{2}} = \frac{1}{2} \cdot \frac{1}{x^{\frac{1}{2}}}$$

$$= \frac{1}{2} \cdot \frac{1}{\sqrt{x}} = \frac{1}{2\sqrt{x}}$$

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

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

$x : 3$
 $x \cdot \frac{1}{3}$
 $x \cdot 3^{-1}$

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

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