

1T, Var 20, del 1

$$\frac{5,5 \cdot 10^{-7} + 0,4 \cdot 10^{-6}}{0,005} = \frac{5,5 \cdot 10^{-7} + 4 \cdot 10^{-7}}{5 \cdot 10^{-3}}$$
$$= \frac{9,5 \cdot 10^{-7}}{5 \cdot 10^{-3}} = 1,9 \cdot 10^{-7+3} = \underline{\underline{1,9 \cdot 10^{-4}}}$$

2) $y = ax + b$

$$a = \frac{\Delta y}{\Delta x} = \frac{0-6}{4-2} = \frac{-6}{2} = -3$$

$$y(2) = 6$$

$$6 = -3 \cdot 2 + b \Rightarrow b = 12 \Rightarrow \underline{\underline{y = -3x + 12}}$$

3) $\begin{cases} 2x + y = 3 \\ 8x - 2y = -12 \end{cases}$

$$\underline{\underline{y = 3 - 2x}}$$

$$8x - 2(3 - 2x) = -12$$

$$8x - 6 + 4x = -12$$

$$8x + 4x = -12 + 6$$

$$12x = -6$$

$$\underline{\underline{x = -\frac{6}{12} = -\frac{1}{2}}}$$

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

4) $x^2 - 5x + 6 = 0$

$$x = \frac{-(-5) \pm \sqrt{(-5)^2 - 4 \cdot 1 \cdot 6}}{2 \cdot 1}$$

$$= \frac{5 \pm 1}{2}$$

$$\Rightarrow \underline{\underline{x = 3}} \vee \underline{\underline{x = 2}}$$

$$\frac{2(x-3) - (x-4)}{(x-2)(x-3)} = \frac{2x-6-x+4}{(x-2)(x-3)}$$
$$= \frac{x-2}{(x-2)(x-3)} = \underline{\underline{\frac{1}{x-3}}}$$

$$5) \quad 2x^2 + 12x + 18 \leq 0 \quad | :2 \quad x = \frac{-6 \pm \sqrt{6^2 - 4 \cdot 1 \cdot 9}}{2 \cdot 1}$$

$$x^2 + 6x + 9 \leq 0$$

$$= \frac{-6}{2} = \underline{\underline{-3}}$$

$$\Rightarrow 2(x+3)^2 \leq 0$$

$(x+3)^2$ alltid positiv verdi bortsett for når $x = -3$,
da er $(-3+3)^2 = 0$

$$\Rightarrow \underline{\underline{x = -3}}$$

$$6) \quad \frac{\sqrt{45} + \sqrt{80}}{\sqrt{125}} = \frac{\sqrt{9 \cdot 5} + \sqrt{16 \cdot 5}}{\sqrt{25 \cdot 5}} = \frac{3\sqrt{5} + 4\sqrt{5}}{5\sqrt{5}} = \frac{7\sqrt{5}}{5\sqrt{5}} = \underline{\underline{\frac{7}{5}}}$$

$$7) \quad 9^2 \cdot 3^{-3} \cdot 8^{\frac{1}{3}} \cdot 27^{-\frac{2}{3}} = (3^2)^2 \cdot 3^{-3} \cdot (2^3)^{\frac{1}{3}} \cdot (3^3)^{-\frac{2}{3}}$$

$$= 3^4 \cdot 3^{-3} \cdot 2 \cdot 3^{-2} = 3^{-1} \cdot 2 = \underline{\underline{\frac{2}{3}}}$$

$$8) \quad \lg 10 + \lg 0,1 + \lg \frac{1}{100} + \lg \sqrt[3]{10}$$

$$= \lg 10 + \lg 10^{-1} + \lg 10^{-2} + \lg 10^{\frac{2}{3}}$$

linær regning

$$= 1 - 1 - 2 + \frac{2}{3} = \frac{-6 + 2}{3} = \underline{\underline{-\frac{4}{3}}}$$

$$a) \lg\left(\frac{3x+3}{3}\right) = 3 = \lg 1000$$

$$3x+3 = 3000 \quad | :3$$

$$x+1 = 1000 \Rightarrow \underline{\underline{x = 999}}$$

$$b) 3x^2 \cdot 3^{-4x} = 1 = 3^0$$

$$x^2 - 4x = 0$$

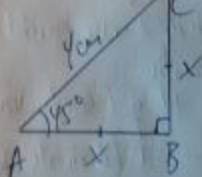
$$x(x-4) = 0 \Rightarrow \underline{\underline{x=0}} \vee \underline{\underline{x=4}}$$

$$c) A = (a-b)^2 \vee A = a^2 - 2ab + b^2$$

$$\underline{(a-b)^2 = a^2 - 2ab + b^2}$$

Andere quadratsatzung!

$$11) \angle B = 90^\circ \quad AC = 4 \text{ cm} \quad \tan \angle A = 1 \Rightarrow \angle A = 45^\circ = \angle C = 45^\circ$$



$$AB = BC = x$$

$$2x^2 = 4^2$$

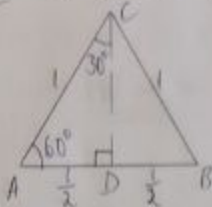
$$x^2 = 8$$

$$\Rightarrow \underline{\underline{AB = BC = 2\sqrt{2} \text{ cm}}}$$

$$\underline{x = \sqrt{8} = \sqrt{4 \cdot 2} = 2\sqrt{2}}$$

$$2) \underline{P(24) + P(42)} = \frac{1}{10} \cdot \frac{1}{10} + \frac{1}{10} \cdot \frac{1}{10} = \frac{1+1}{100} = \frac{2}{100} = \underline{\underline{\frac{1}{50}}}$$

13) a)



$$\underline{\sin 30^\circ} = \frac{AD}{AC} = \frac{\frac{1}{2}}{1} = \underline{\underline{\frac{1}{2}}} (= \cos 60^\circ)$$

$$b) (QR)^2 = 8^2 + 5^2 - 2 \cdot 8 \cdot 5 \cdot \cos 60^\circ$$

$$(QR)^2 = 64 + 25 - 80 \cdot \frac{1}{2} = 64 + 25 - 40 = 49$$

$$\underline{\underline{QR = \sqrt{49} = 7}}$$

14) Graf nr 2 er den deriverte til p

(Måtte være nr 2 eller 6. Men nr 2 viser korrekt at Ha q. deriverte for $x < 1$ er positiv)

* Graf nr 4 er den deriverte til q (ereste som er konstant)

* -4 - 5 - -4 - -1 (deriverte = 0 for $x=0$)

* -4 - 3 - -4 - -5 (deriverte altid neg!)

15) $f'(2) = 0$

$f'(2) = 0 \Rightarrow$ nullpt for $f'(x)$

Derivate er symmetrisk om $x=2$

$\Rightarrow f'(0) = f'(4) = 12$

$f'(1) = f'(3) = 3$

