

Oppgave: Forenkling

$$\frac{a^{1/3} \sqrt{\sqrt{a}}}{\sqrt[4]{a} (\sqrt[3]{a})^2} = \frac{a^{1/3} a^{1/4}}{a^{-1/2} a^{2/3}}$$

$$= a^{1/3} \cdot a^{1/4} (a^{-1/2})^{-1} (a^{2/3})^{-1}$$

$$= a^{1/3} a^{1/4} a^{1/2} a^{-2/3}$$

$$= a^{\frac{1}{3} - \frac{2}{3} + \frac{1}{4} + \frac{2}{4}} = a^{-1/3} \cdot a^{3/4} = \frac{(4\sqrt{a})^3}{3\sqrt{a}}$$

$$= a^{\frac{3}{4} - \frac{1}{3}} = a^{\frac{9}{12} - \frac{4}{12}}$$

$$= a^{5/12} = \underline{\underline{(12\sqrt{a})^5}}$$

2 Løs likning $2 \ln x - \ln(4x-3) = 0$

$$\left(\begin{aligned} \ln(a \cdot b) &= \ln(a) + \ln(b) \\ \ln(a^r) &= r \ln a \\ \ln\left(\frac{a}{b}\right) &= \ln a - \ln b \end{aligned} \right)$$

$$\ln\left(\frac{1}{a}\right) = \ln(a^{-1}) = -\ln a$$

(π ...)

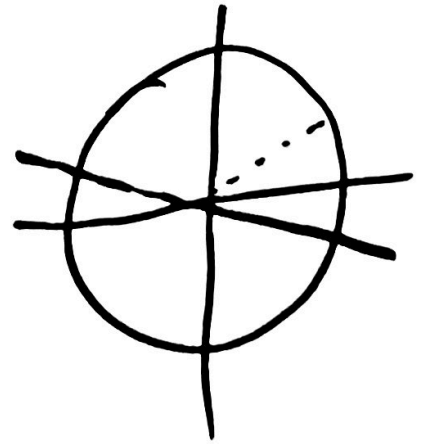
Løsningene er $x=1$ og $x=3$

os ligningen

$$\sqrt{3} \tan(2x) + 1 = 0$$
$$x \in [0, 2\pi].$$

$$(2x) = \frac{-1}{\sqrt{3}}$$

$$= \frac{-\pi}{6} + \pi \cdot n$$



$$x \in \left\{ \frac{5\pi}{12}, \frac{11\pi}{12}, \frac{17\pi}{12}, \frac{23\pi}{12} \right\}$$

4 Deriver $\ln \sqrt{\left| \frac{x}{2x-1} \right|}$ $x \neq 0, \frac{1}{2}$.

$$f(x) = \frac{1}{2} \ln \left(\frac{|x|}{|2x-1|} \right)$$

$$= \frac{1}{2} (\ln|x| - \ln|2x-1|)$$

$$f'(x) = \frac{1}{2} \left(\frac{1}{x} - \frac{1}{2x-1} \cdot \underbrace{(2x-1)'}_2 \right)$$

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

oppgave 5 Løs $2\sqrt{2x+1} - 2 = x$

$$2\sqrt{2x+1} = x+2 \quad \text{kvadrer begge sider}$$

$$4(2x+1) = (x+2)^2 = x^2 + 4x + 4$$

$$x^2 + 4x - 8x + 4 - 4 = 0$$

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

$$x(x-4) = 0$$

sjekk for falske løsninger:

$x=0$	vs 2	Hs 2	✓
$x=4$	vs $2\sqrt{9}=6$	Hs $4+2=6$	✓

Løsningene er $x=0$ og $x=4$