JUURIFUNKTION JA MURTOPOTENSSIFUNKTION DERIVAATTA

$f(x) = \sqrt{x}$, määritelty $x \geq 0$

$$D\sqrt{x} = D\,x^{\frac{1}{2}} = \frac{1}{2}x^{\frac{1}{2}-1} = \frac{1}{2}x^{-\frac{1}{2}}$$

$$= \frac{1}{2}\cdot\frac{1}{x^{\frac{1}{2}}} = \frac{1}{2}\cdot\frac{1}{\sqrt{x}} = \frac{1}{2\sqrt{x}}, \quad x > 0$$

$$\boxed{D\sqrt{x} = \frac{1}{2\sqrt{x}}, \quad x > 0}$$

esim (91a) $(x \geq 0)$

$$D4\sqrt{x} = \frac{4^2}{2\sqrt{x}} = \frac{2}{\sqrt{x}} = \frac{2\sqrt{x}}{x}, \quad x > 0$$

$$\boxed{D\sqrt{f(x)} = \frac{f'(x)}{2\sqrt{f(x)}}, \quad f(x) > 0 \text{ (mj.)}} \qquad f(x) \geq 0$$

sisäf. deriv.!

esim 2 (93a)

$y = f(x)$

$x = x_0 = 1$

$f(x) = y = \sqrt{3-2x}$

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

Mj: $3 - 2x \geq 0$

$x \leq \frac{3}{2}$

$g(x) = 3-2x$

$g'(x) = -2$

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

$$f'(1) = -\frac{1}{\sqrt{3-2\cdot 1}} = -1$$

V: Tangentin kk $= -1$.