

SIN + COS DERIVAATAT

Peruskaavat:

$$\begin{aligned} D \sin x &= \cos x \\ D \cos x &= -\sin x \end{aligned}$$

Jos pelkan x sijaan on jokin muuta (esim ax tai $\frac{x}{6}$ tai x^3 tai $2x^2-3x+1$)

"sisäfunktio"

$$\begin{aligned} D \sin f(x) &= \cos f(x) \cdot f'(x) \\ D \cos f &= -f' \sin f \end{aligned}$$

← sisäfunktion derivaatta

ESIM $D 3 \sin x = 3 \cdot \cos x$

$$D \sin 3x = \cos 3x \cdot D3x = 3 \cos 3x$$

$$D \sin x^3 = \cos x^3 \cdot Dx^3 = 3x^2 \cos x^3$$

$$D x^3 = 3x^2$$

$$D f^3 = 3 \cdot f^2 \cdot f'$$

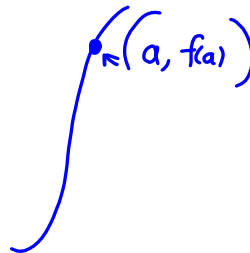
$$D (\sin x)^3 = 3 (\sin x)^2 \cdot D \sin x$$

merk. useimmiten $\sin^3 x$

$$= 3 \sin^2 x \cdot \cos x$$

$$y - f(a) = f'(a) (x - a)$$

tangentin yhtälö
kohdassa $x=a$



⇒ ESIM 2 + 3 s.116-117

s.118-119

270

271

272

273

275

276

280

281

282

286

$$D \sin x = \cos x$$

$$D \cos x = -\sin x$$

$$D f^n = n f^{n-1} \cdot f'$$

$$D fg = f'g + fg'$$

$$D \frac{f}{g} = \frac{f'g - fg'}{g^2}$$