

Esim. a) $D(3\sin x - 2\cos x) = D(3\sin x) - D(2\cos x) = 3\cos x - 2(-\sin x) = 3\cos x + 2\sin x$

b) $D\sin^4 x = D(\sin x)^4 = 4(\sin x)^3 \cdot \cos x = 4\sin^3 x \cos x$

c) $D\sin 3x = \cos 3x \cdot 3$
 $\uparrow$
 $D(3x)$ (sisefunktion derivaatti)

yleisesti

$$D\sin f(x) = \cos f(x) \cdot f'(x)$$

$$D\cos f(x) = -\sin f(x) \cdot f'(x)$$

YHDISTETYN FUNKTION
DERIVAATTA

luom. Derivoitaessa trig. funktioita on kulman yksikkö oltava radiaani.

$$D(f \cdot g) = f' \cdot g + f \cdot g'$$

Esim. $f(x) = x^2 \sin 3x$

$$f'(x) = 2x \sin 3x + x^2 \cdot \cos 3x \cdot 3 = 2x \sin 3x + 3x^2 \cos 3x$$

18.4 $f(x) = \cos x - \frac{1}{2}x$

$$f'(x) = -\sin x - \frac{1}{2} = 0 \quad (\Rightarrow) \sin x = -\frac{1}{2} \quad (\Rightarrow) \sin x = \sin(-\frac{\pi}{6})$$

$$(\Rightarrow) x = -\frac{\pi}{6} + m2\pi \text{ tai } x = \pi - (-\frac{\pi}{6}) + m2\pi = \frac{7\pi}{6} + m2\pi, m \in \mathbb{Z}$$

