

Sele. 5.4

$$\text{ii) } \lim_{x \rightarrow 0} \frac{\tan x}{x} = \lim_{x \rightarrow 0} \frac{\sin x}{x \cos x}$$

$$= \lim_{x \rightarrow 0} \underbrace{\frac{\sin x}{x}}_{\substack{\downarrow \\ 1 \\ \text{när } x \rightarrow 0}} \cdot \underbrace{\frac{1}{\cos x}}_{\substack{\downarrow \\ 1 \\ \text{när } x \rightarrow 0}} = 1 \cdot 1 = \underline{\underline{1}}$$

$$\text{iii) } \lim_{x \rightarrow 0} \frac{1 - \cos x}{x^2} = \lim_{x \rightarrow 0} \frac{(1 - \cos x)(1 + \cos x)}{x^2(1 + \cos x)}$$

$$= \lim_{x \rightarrow 0} \frac{1 - \cos^2 x}{x^2(1 + \cos x)} = \lim_{x \rightarrow 0} \frac{\sin^2 x}{x^2} \cdot \frac{1}{1 + \cos x}$$

$$= \lim_{x \rightarrow 0} \underbrace{\frac{\sin x}{x}}_{\substack{\downarrow \\ 1}} \cdot \underbrace{\frac{\sin x}{x}}_{\substack{\downarrow \\ 1}} \cdot \underbrace{\frac{1}{1 + \cos x}}_{\substack{\downarrow \\ \frac{1}{1+1} = \frac{1}{2}}} = 1 \cdot 1 \cdot \frac{1}{2} = \underline{\underline{\frac{1}{2}}}$$

6.1: Derivasyon

Deriver:

$$\text{1) e) } f(x) = \cos(e^x)$$

$$f'(x) = \underline{\underline{\sin(e^x) e^x}}$$

3.) c) Logaritmisk derivasjon:

$$f(x) = x^x$$

$$f'(x) = f(x) \cdot D[\ln |f(x)|]$$

$$\text{Set. 6.1.10} = x^x \cdot D[\ln |x^x|]$$

$$= x^x \cdot D[\ln(|x|^x)]$$

$$= x^x \cdot D[x \ln |x|]$$

Sett opp på noen steder og overblikk der selv