

Exempel: Beräkna  $\lim_{x \rightarrow 2} \frac{e^x - e^2(x-1)}{(x-2)^2}$

Lösning:  $x = 2+h$   $x \rightarrow 2 \Leftrightarrow h \rightarrow 0$

$$\frac{e^x - e^2(x-1)}{(x-2)^2} = \frac{e^{2+h} - e^2(2+h-1)}{(2+h-2)^2} = \frac{e^2 \cdot e^h - e^2(1+h)}{h^2}$$

$$= \frac{e^2 \left( (1+h + \frac{h^2}{2} + o(h^3)) - (1+h) \right)}{h^2} = \frac{\frac{e^2 h^2}{2} + o(h^3)}{h^2} =$$

$$= \frac{e^2}{2} + o(h) \xrightarrow{h^2} \underline{\underline{\frac{e^2}{2}}} \text{ då } h \rightarrow 0.$$