

11.20

lördag 7 januari 2023

00:57

$$\lim_{x \rightarrow 0} \frac{1 - \cos x}{\ln(1+x) - x} = \lim_{x \rightarrow 0} \frac{1 - (1 - \frac{1}{2}x^2 + \frac{1}{24}x^4 + x^6 B(x))}{x - \frac{1}{2}x^2 + \frac{1}{3}x^3 - \frac{1}{4}x^4 + x^5 B(x) - x}$$

$$\cos x = 1 - \frac{1}{2}x^2 + \frac{1}{24}x^4 + x^6 B(x)$$

$$\ln(1+x) = 0 + x - \frac{1}{2}x^2 + \frac{1}{3}x^3 - \frac{1}{4}x^4 + x^5 B(x)$$

$$= \lim_{x \rightarrow 0} \frac{\frac{1}{2}x^2 - \frac{1}{24}x^4 + x^6 B(x)}{-\frac{1}{2}x^2 + \frac{1}{3}x^3 - \frac{1}{4}x^4 + x^5 B(x)} = \lim_{x \rightarrow 0} \frac{x^2}{x^2} \cdot \frac{\frac{1}{2} - \frac{1}{24}x^2 + x^4 B(x)}{-\frac{1}{2} + \frac{1}{3}x^3 - \frac{1}{4}x^4 + x^5 B(x)} =$$

$$\text{S: } -1 \text{ då } x \rightarrow 0$$