

Aufgabe 2

Montag, 26. September 2011
11:47

$$\begin{aligned} a) & \left(\lim_{x \rightarrow 0} \frac{\sin(2x)}{x} \right) \cdot \frac{1}{1 + \sqrt{1 - \ln(0)}} \quad \left| \frac{0}{0}, \text{L'Hopital} \right. \\ &= \left(\lim_{x \rightarrow 0} \frac{2 \cos(2x)}{1} \right) \cdot \frac{1}{\infty} \\ &= 2 \cos(0) \cdot \frac{1}{\infty} = \underline{\underline{0}} \end{aligned}$$

$$\begin{aligned} b) & \lim_{n \rightarrow \infty} \left(\frac{n^2(n-1) - n^2(n+1)}{(n+1)(n-1)} \right) \\ &= \lim_{n \rightarrow \infty} \left(\frac{\cancel{n^3} - n^2 - \cancel{n^3} - n^2}{n^2 - 1} \right) \\ &= \lim_{n \rightarrow \infty} \left(\frac{-2n^2}{n^2 - 1} \right) \\ &= \lim_{n \rightarrow \infty} \left(\frac{-2}{1 - \frac{1}{n^2}} \right) = \underline{\underline{-2}} \end{aligned}$$