

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

$$= \lim_{x \rightarrow 0} \frac{2 \sin^2 \frac{x}{2}}{2x^2 \cos^2 x} = \lim_{x \rightarrow 0} \frac{\sin \frac{x}{2} \cdot \sin \frac{x}{2}}{\frac{x}{2} \cdot \frac{x}{2} \cdot 4 \cos^2 x} = \frac{1}{4}$$

$$\lim_{x \rightarrow 0} \frac{\sin x}{x} = 1$$