11 Найти предел функции:

$$\lim_{x\to 0} \frac{tgx}{x} = (1)$$

$$\lim_{x\to 0} tgx = (tgx)_{x=0} = tg0 = 0$$

$$\lim_{x\to 0} x = (x)_{x=0} = 0$$

$$(1) = \left(\frac{0}{0}\right)$$

$$\frac{tgx}{x} = \frac{\sin x}{\cos x}\,\frac{1}{x} = \frac{\sin x}{x}\cdot\frac{1}{\cos x}$$

$$(1) = \lim_{x\to 0} \frac{\sin x}{x}\,\frac{1}{\cos x} = \frac{\lim\limits_{x\to 0}\frac{\sin x}{x}}{\lim\limits_{x\to 0}\cos x} = (2)$$

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

$$\lim_{x\to 0} \cos x = (\cos x)_{x=0} = \cos 0 = 1$$

$$(2) = \frac{1}{1} = 1$$

Ответ:

$$\lim_{x\to 0} \frac{tgx}{x} = 1$$