

Тема „Предел φ -цели“

$$\begin{aligned} 4.c. \lim_{x \rightarrow \infty} \left(\frac{x+3}{x} \right)^{4x+1} &= \lim_{x \rightarrow \infty} \left(1 + \frac{3}{x} \right)^{4x+1} = \\ &= e^{\lim_{x \rightarrow \infty} \frac{3(4x+1)}{x}} = e^{12} \end{aligned}$$

Тема „Теорема о пределах“

$$\begin{aligned} 1.d. \lim_{x \rightarrow \infty} \left(\frac{4x+3}{4x-3} \right)^{6x} &= \lim_{x \rightarrow \infty} \left(\frac{4x+3}{4x-3} \right)^{\frac{4x-3}{6} \cdot \frac{6}{4x-3} \cdot 6x} = \\ &= e^{\lim_{x \rightarrow \infty} \frac{36x}{4x-3}} = e^9 \end{aligned}$$

$$\begin{aligned} 1.e. \lim_{x \rightarrow \infty} \frac{\sin x + \ln x}{x} &= \lim_{x \rightarrow \infty} \frac{\sin x}{x} + \lim_{x \rightarrow \infty} \frac{\ln x}{x} = \\ &= 0 + 0 = 0 \end{aligned}$$

$$\begin{aligned} 1.f. \lim_{x \rightarrow 0} \frac{\sin x + \ln x}{x} &= \lim_{x \rightarrow 0} \frac{\sin x}{x} + \lim_{x \rightarrow 0} \frac{\ln x}{x} = \\ &= 1 - \infty = -\infty \end{aligned}$$