№ 7319

$$\lim_{x\to\infty} x^2\cdot e^{-x} = \lim_{x\to\infty}\frac{x^2}{e^x} = \left[\frac{\infty}{\infty}\right] = \lim_{x\to\infty}\frac{2x}{e^x} =$$

$$= \left[\frac{0}{0}\right] = \lim_{x\to\infty}\frac{2}{e^x} = 0$$

№ 7320

$$\lim_{x\to 0}\left(\frac{1}{x} - \frac{1}{\sin x}\right) = \lim_{x\to 0}\frac{\sin x - x}{\sin x \cdot x} = \left[\frac{0}{0}\right] =$$

$$= \lim_{x\to 0}\frac{\cos - 1}{\sin x + (x\cdot\cos x} = \lim_{x\to 0}\frac{-\sin x}{\cos x + \cos x - x\cdot\sin x} =$$

$$= 0/2 = 0$$

№ 7321

$$\lim_{x\to\infty} x\cdot(e^{\frac{1}{x}} - 1) = [\infty\cdot 0] = \lim_{x\to\infty}\frac{e^{\frac{1}{x}}-1}{1/x} =$$

$$= \lim_{x\to\infty}\frac{e^{\frac{1}{x}}\cdot\left(\frac{1}{x}\right)' - 0}{\left(\frac{1}{x}\right)'} = e^{\frac{1}{x}} = 1$$

№ 7322

$$\lim_{x\to 1}\left(\frac{1}{1-x^3}-\frac{1}{1-x^2}\right)=[\infty-\infty]=$$

$$=\left[\begin{array}{l} a^3-b^3=(a-b)(a^2+ab+b^2) \\ a^2-b^2=(a-b)(a+b) \end{array}\right]=$$

$$=\lim_{x\to 1}\left(\frac{1}{(x-1)(x^2+x+1)}-\frac{1}{(x-1)(x+1)}\right)=$$

$$=\lim_{x\to 1}\left(\frac{(x+1)-(x^2+x+1)}{(x-1)(x^2+x+1)(x+1)}\right)=\lim_{x\to 1}\frac{-x^2}{(x-1)(x^2+x+1)(x+1)}=$$

$$=\left[\frac{(-1)^2}{(1-1)(1+1+1)(1+1)}\right]=\left[\frac{1}{0}\right]=\infty$$

18.05 ~ Повторение ~