$\boxed{1.1}$ Найти предел последовательности:

$$\lim_{n \to \infty} \frac{(23-2n^2)(3n^2+17)^2}{4n^6+n-1} = (1)$$

$$(23-2n^2)(3n^2+17)^2 = n^2\left(\frac{23}{n^2}-2\right)\left(n^2\left(3+\frac{17}{n^2}\right)\right)^2 =$$

$$= n^2\left(-2+\frac{23}{n^2}\right) n^4\left(3+\frac{17}{n^2}\right)^2 = n^6\left(-2+\frac{23}{n^2}\right)\left(3+\frac{17}{n^2}\right)^2$$

$$4n^6+n-1 = n^6\left(4+\frac{n}{n^6}-\frac{1}{n^6}\right) = n^6\left(4+\frac{1}{n}-\frac{1}{n^6}\right)$$

$$\frac{(23-2n^2)(3n^2+17)^2}{4n^6+n-1} = \frac{n^6\left(-2+\frac{23}{n^2}\right)\left(3+\frac{17}{n^2}\right)^2}{n^6\left(4+\frac{1}{n}-\frac{1}{n^6}\right)} =$$

$$= \frac{\left(-2+\frac{23}{n^2}\right)\left(3+\frac{17}{n^2}\right)^2}{4+\frac{1}{n}-\frac{1}{n^6}}$$

$$(1) = \lim_{n \to \infty} \frac{\left(-2+\frac{23}{n^2}\right)\left(3+\frac{17}{n^2}\right)^2}{4+\frac{1}{n}-\frac{1}{n^6}} =$$

$$= \frac{\left(-2+23\lim\limits_{n\to\infty}\frac{1}{n^2}\right)\left(3+17\lim\limits_{n\to\infty}\frac{1}{n^2}\right)^2}{4+\lim\limits_{n\to\infty}\frac{1}{n}-\lim\frac{1}{n^6}} =$$

$$= \frac{(-2+23\cdot 0)(3+17\cdot 0)^2}{4+0-0} = \frac{(-2)(3)^2}{4} = -\frac{9}{2}$$

Ответ: $\boxed{\lim\limits_{n \to \infty} \frac{(23-2n^2)(3n^2+17)^2}{4n^6+n-1} = -\frac{9}{2}}$