Zadatak 8. Izračunaj:

1) $\lim\limits_{n\to\infty} \dfrac{n-2}{2n-5}$; **2)** $\lim\limits_{n\to\infty} \dfrac{4n+1}{5n+1}$;

3) $\lim\limits_{n\to\infty} \dfrac{1-7n}{2n-7}$; **4)** $\lim\limits_{n\to\infty} \dfrac{5n+1}{3-4n}$.

Rješenje.

1) $$\lim_{n\to\infty} \frac{n-2}{2n-5} = \lim_{n\to\infty} \frac{1-\frac{2}{n}}{2-\frac{5}{n}} = \frac{\lim\limits_{n\to\infty}\left(1-\frac{2}{n}\right)}{\lim\limits_{n\to\infty}\left(2-\frac{5}{n}\right)} = \frac{1}{2};$$

2) $$\lim_{n\to\infty} \frac{4n+1}{5n+1} = \lim_{n\to\infty} \frac{4+\frac{1}{n}}{5+\frac{1}{n}} = \frac{\lim\limits_{n\to\infty}\left(4+\frac{1}{n}\right)}{\lim\limits_{n\to\infty}\left(5+\frac{1}{n}\right)} = \frac{4}{5};$$

3) $$\lim_{n\to\infty} \frac{1-7n}{2n-7} = \lim_{n\to\infty} \frac{\frac{1}{n}-7}{2-\frac{7}{n}} = \frac{\lim\limits_{n\to\infty}\left(\frac{1}{n}-7\right)}{\lim\limits_{n\to\infty}\left(2-\frac{7}{n}\right)} = -\frac{7}{2};$$

4) $$\lim_{n\to\infty} \frac{5n+1}{3-4n} = \lim_{n\to\infty} \frac{5+\frac{1}{n}}{\frac{3}{n}-4} = \frac{\lim\limits_{n\to\infty}\left(5+\frac{1}{n}\right)}{\lim\limits_{n\to\infty}\left(\frac{3}{n}-4\right)} = -\frac{5}{4}.$$