Ćwiczenia 2. Granica ciągu liczbowego

Zad. Oblicz granicę ciągu o wyrazie ogólnym a_n:

$$a_n = \frac{2n+1}{3n+2} \qquad a_n = \frac{4+5n}{-3n+2}$$

$$a_n = \left(\frac{n+1}{3n-3}\right)^2 \qquad a_n = \left(\frac{1-2n}{5n-3}\right)^3$$

$$a_n = \frac{(3n+1)^2}{n^2-1} \qquad a_n = \frac{(n+1)(2n-1)}{(3n+3)(2-n)}$$

$$a_n = \frac{-3n^2+2n-3}{n^2+5} \qquad a_n = \frac{n^4+2n^2-1}{-2n^3+1}$$

$$a_n = \frac{(n^2+1)^2}{3n^5-n^3+5n^2} \qquad a_n = \sqrt{\frac{2n+3}{3n-2}}$$

$$a_n = \sqrt{\frac{n^2-5n-1}{6n^2+1}} \qquad a_n = \sqrt[n]{2^n+4^n}$$

$$a_n = \sqrt[n]{3^n+4^n+5^n} \qquad a_n = \sqrt[n]{\left(\frac{3}{4}\right)^n+1+\left(\frac{4}{3}\right)^n}$$

$$a_n = \frac{(-1)^n}{n+1} \qquad a_n = \frac{n^2+(-1)^n}{2n^2+4}$$

$$a_n = \frac{\sin(n)}{n-1} \qquad a_n = \frac{n\sin(2n-1)}{n^2+1}$$

$$a_n = \frac{n^3+\cos(n!)}{2n^3+4} \qquad a_n = \frac{5^n+7^n}{5^n-7^n}$$

$$a_n = \frac{2^n+6^n}{2^n+5^n} \qquad a_n = \frac{2^n+3\cdot 4^n-8^n}{3\cdot 2^{n+3}}$$

$$a_n = \frac{3\cdot 2^{n+3}+2\cdot 6^{n+2}}{2^{n+4}-3\cdot 6^{n+3}} \qquad a_n = \sqrt{n+1}-\sqrt{n}$$

$$a_n = \sqrt{n^2+1}-n+2 \qquad a_n = \sqrt{n^2+n}-\sqrt{n^2+3}$$

$$a_n = 3n-2-\sqrt{9n^2+5n+1} \qquad a_n = \sqrt{n+\sqrt{n}}-\sqrt{n-\sqrt{n}}$$

$$a_n = \frac{1+2+\cdots+n}{n^2} \qquad a_n = \frac{1+\frac{1}{2}+\frac{1}{4}+\cdots+\frac{1}{2^n}}{1+\frac{1}{3}+\frac{1}{9}+\cdots+\frac{1}{3^n}}$$

$$a_n = \left(1+\frac{3}{n}\right)^n \qquad a_n = \left(1+\frac{5}{4n}\right)^{2n}$$

$$a_n = \left(1 + \frac{1}{n^2}\right)^{-2n}$$

$$a_n = \left(1 + \frac{1}{2n}\right)^{n^2}$$

$$a_n = \left(1 + \frac{1}{n+2}\right)^{3\sqrt{n}-2}$$

$$a_n = \left(\frac{n^2+2}{n^2}\right)^{3n^2}$$

$$a_n = n(\ln(n+1) - \ln n)$$

$$a_n = e^{-\frac{n!}{(n-2)!}}$$

$$a_n = 4^{\sin^2\left(\frac{n\pi}{2}\right)}$$