ESERCIZI SUI LIMITI DI SUCCESSIONI

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Analisi Matematica L-A

Calcolare i seguenti limiti di successioni

$$\lim_{n \to \infty} (1 - (-1)^n) \sin(1/n) \tag{1}$$

$$\lim_{n \to \infty} (\sqrt{2n + 1} - \sqrt{n - 2}) \tag{2}$$

$$\lim_{n \to \infty} (\sqrt{n^2 + 2n} - \sqrt{n^2 - n + 4}) \tag{3}$$

$$\lim_{n \to \infty} (2 - 3e^{-n})\sqrt{n}(\sqrt{n + 2} - \sqrt{n - 2}) \tag{4}$$

$$\lim_{n \to \infty} \frac{\sqrt{2n + 11} - \sqrt{2n + 4}}{\sqrt{n^2 + 2} - \sqrt{n^2 - 1}} \tag{5}$$

$$\lim_{n \to \infty} \frac{\sqrt{2n + 11} - \sqrt{2n + 4}}{\sqrt{n^2 + 2n} - \sqrt{n^2 - n}} \tag{6}$$

$$\lim_{n \to \infty} \frac{\sqrt{2n + 11} - \sqrt{2n + 4}}{\sqrt{n^2 + 2\sqrt{n}} - \sqrt{n^2 - \sqrt{n}}} \tag{7}$$

$$\lim_{n \to \infty} (1 + \cos(n)/n)(1 - \cos(1)) \tag{8}$$

$$\lim_{n \to \infty} \left(\frac{n + 1}{n - 1} \right)^{n+3} \tag{9}$$

$$\lim_{n \to \infty} \frac{n^5 - 3n^3 + 2}{1 - 3n^4 + 2n^8} \tag{10}$$

$$\lim_{n \to \infty} \cos \left(\frac{\pi n}{3n + 1} \right) \frac{n^2 - 3n + 2}{1 - 3n + 2n^2} \tag{11}$$

$$\lim_{n \to \infty} \frac{2^n + n^2 - \log^{12}(n)}{3^n - n\sqrt{n} + 5} \tag{12}$$

$$\lim_{n \to \infty} \left(\frac{2^n + n^2 - \log^{12}(n)}{3^n - n\sqrt{n} + 5} \right)^{1/n} \tag{13}$$

$$\lim_{n\to\infty} \left(\frac{2^n + n^2 - \log^{12}(n)}{3^n - n\sqrt{n} + 5} \right)^{1/n^2} \tag{14}$$

Soluzioni. (1) 0; (2) $+\infty$; (3) 3/2; (4) 4; (5) $+\infty$; (6) 0; (7) $\frac{7}{6}\sqrt{2}$; (8) $1 - \cos(1)$; (9) e^2; (10) 0; (11) 1/4; (12) 0; (13) 2/3; (14) 1.