

## Esercizi per il 28/10/19

1. Calcolare i seguenti limiti.

$$(a) \lim_{n \rightarrow +\infty} \sqrt{n^2 + n} - \sqrt{n^2 + 1}$$

$$(b) \lim_{n \rightarrow +\infty} \frac{1 - n}{\sqrt{n} + 1}$$

$$(c) \lim_{n \rightarrow +\infty} \frac{\sqrt{n} + \sqrt{n+1}}{\sqrt{n+2}}$$

$$(d) \lim_{n \rightarrow +\infty} \frac{\sin n}{\sqrt{n}}$$

$$(e) \lim_{n \rightarrow +\infty} \frac{(-1)^n + 2}{(-1)^{n+1} - 2}$$

$$(f) \lim_{n \rightarrow +\infty} \frac{n + 3}{n\sqrt[4]{n} - 18}$$

$$(g) \lim_{n \rightarrow +\infty} \frac{\sqrt{n^5} - 2n}{4n^2 - \sqrt{n} + 11}$$

$$(h) \lim_{n \rightarrow +\infty} \frac{n + (-1)^n}{n - (-1)^n}$$

$$(i) \lim_{n \rightarrow +\infty} \frac{2^n - \left(\frac{3}{2}\right)^n + \left(\frac{4}{3}\right)^n}{\left(\frac{6}{5}\right)^n - \left(\frac{7}{6}\right)^n}$$

$$(j) \lim_{n \rightarrow +\infty} \frac{2^n - 4^n}{3^n - n!}$$

$$(k) \lim_{n \rightarrow +\infty} \frac{n^n}{2^n n!}$$

$$(l) \lim_{n \rightarrow +\infty} \sqrt[n]{\frac{3^n}{n}}$$

2. Mettere in ordine crescente di infinito le seguenti successioni, verificando i casi dubbi:

$$3^n \quad n^{\frac{1}{3}} \quad n!10^n \quad n!n^{10} \quad n^n \quad (\log_2 n)^{100} \quad 2^n n^5 \quad n^{\frac{1}{4}} \log n.$$