

LIMITE DI POLINOMI

$$P(x) = a_n x^n + a_{n-1} x^{n-1} + \dots + a_1 x^1 + a_0$$

$$n > 0 \quad x \neq 0$$

$$\begin{aligned} P(x) &= x^n \left(a_n + a_{n-1} \frac{x^{n-1}}{x^n} + \dots + a_1 \frac{x}{x^n} + \frac{a_0}{x^n} \right) = \\ &= x^n \left(a_n + \frac{a_{n-1}}{x^{n-n+1}} + \dots + \frac{a_1}{x^{n-1}} + \frac{a_0}{x^n} \right) \end{aligned}$$

$$\lim_{n \rightarrow \infty} P(x) = \infty$$

ESEMPIO

$$f(x) = x^3 + 2x^2 - 7x + 1$$

$$\lim_{x \rightarrow -\infty} f(x) = \lim_{x \rightarrow -\infty} x^3 \left(1 + \frac{2}{x} - \frac{7}{x^2} + \frac{1}{x^3} \right) = -\infty$$

$$\lim_{x \rightarrow +\infty} f(x) = \lim_{x \rightarrow +\infty} x^3 \left(1 + \frac{2}{x} - \frac{7}{x^2} + \frac{1}{x^3} \right) = +\infty$$