LIMITI

Limiti immediati

Esercizio 1

$\lim_{x\to -\infty} x^7 = -\infty$ $\quad$ $\lim_{x\to -\infty} x^6 = +\infty$ $\quad$ $\lim_{x\to +\infty} x^7 = +\infty$

Esercizio 2

$\lim_{x\to +\infty} \frac{3}{x^7} = 0^+$ $\quad$ $\lim_{x\to 0^-} \frac{3}{x^7} = -\infty$ $\quad$ $\lim_{x\to 0^+} \frac{3}{x^7} = +\infty$

Esercizio 3

$\lim_{x\to +\infty} \sqrt[4]{x} = +\infty$ $\quad$ $\lim_{x\to -\infty} \sqrt[4]{x} = \nexists$ $\quad$ $\lim_{x\to -\infty} \sqrt[5]{x} = -\infty$

Esercizio 4

$\lim_{x\to -\infty} \left(\frac{5}{7}\right)^x = +\infty$ $\quad$ $\lim_{x\to +\infty} \left(\frac{5}{7}\right)^x = 0^+$ $\quad$ $\lim_{x\to 0} \left(\frac{5}{7}\right)^x = 1$

Esercizio 5

$\lim_{x\to -\infty} \left(\frac{5}{3}\right)^x = 0^+$ $\quad$ $\lim_{x\to +\infty} \left(\frac{5}{3}\right)^x = +\infty$ $\quad$ $\lim_{x\to 0} \left(\frac{5}{3}\right)^x = 1$

Esercizio 6

$\lim_{x\to -\infty} log_2 x = \nexists$ $\quad$ $\lim_{x\to +\infty} log_2 x = +\infty$ $\quad$ $\lim_{x\to 0^+} log_2 x = -\infty$

Esercizio 7

$\lim_{x\to -\infty} log_{\frac{2}{3}} x = \nexists$ $\quad$ $\lim_{x\to +\infty} log_{\frac{2}{3}} x = -\infty$ $\quad$ $\lim_{x\to 0^+} log_{\frac{2}{3}} x = +\infty$

Esercizio 8

$\lim_{x\to 3}(x^2 - x^3) = \lim_{x\to 3} x^2 - \lim_{x\to 3} x^3 = 3^2 - 3^3 = -18$.

Esercizio 9

$\lim_{x\to 2}(x^2 - 3^x) = \lim_{x\to 2} x^2 - \lim_{x\to 2} 3^x = 2^2 - 3^2 = -5$.

Esercizio 10

$\lim_{x\to 0}(\sin x \cdot \cos x) = \lim_{x\to 3} \sin x \cdot \lim_{x\to 3} \cos x = 0 \cdot 1 = 0$.

Esercizio 11

$\lim_{x\to \frac{\pi}{3}}(\tan^2 x) = \left(\lim_{x\to \frac{\pi}{3}} \tan x\right)^2 = \left(\sqrt{3}\right)^2 = 3$.

Esercizio 12

$$\lim_{x\to 1}\frac{log_3 x}{x^2} = \frac{\lim_{x\to 1} log_3 x}{\lim_{x\to 1} x^2} = \frac{log_3 1}{1^2} = \frac{0}{1} = 0 .$$

Esercizio 13

$$\lim_{x\to 5^+}\left(x-\frac{3}{x-5}\right) = 5-(+\infty) = -\infty .$$

Esercizio 14

$$\lim_{x\to 5^-}\left(x-\frac{3}{x-5}\right) = 5-(-\infty) = +\infty .$$

Esercizio 15

$$\lim_{x\to 0^+}\left(ln\, x-\frac{3}{x}\right) = -\infty-(+\infty) = -\infty .$$

Esercizio 16

$$\lim_{x\to 0^-}\left(ln\, x-\frac{3}{x}\right) = \nexists .$$

Esercizio 17

$$\lim_{x\to 0^+}[\,(x^2-1)\cdot ln\, x\,] = -1\cdot(-\infty) = +\infty .$$

Esercizio 18

$$\lim_{x\to -\infty}[\,(x^2-1)\cdot ln(-x)\,] = (+\infty)\cdot(+\infty) = +\infty .$$

Esercizio 19

$$\lim_{x\to 0^-}\frac{\cos x}{x} = \frac{1}{0^-} = -\infty .$$

Esercizio 20

$$\lim_{x\to 0^+}\frac{x}{ln\, x} = \frac{0^+}{-\infty} = 0^- .$$