CALCOLO DI LIMITI

1) $\lim_{x \to \frac{1}{2}} (4x^2 - 2x + 3) = 4 \cdot \frac{1}{4} - 2 \cdot \frac{1}{2} + 3 = 1 - 1 + 3 = 3$ (1)

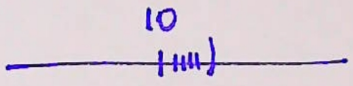
2) $\lim_{x \to 0^-} \left(3 - \frac{1}{x}\right) = 3 - \frac{1}{0^-} = 3 - (-\infty) = 3 + \infty = +\infty$

3) $\lim_{x \to -\infty} \left(\frac{1}{x+2} - \frac{1}{x}\right) = \frac{1}{-\infty} - \frac{1}{-\infty} = 0 - 0 = 0$

4) $\lim_{x \to 3} \frac{x^2 + 3}{x^2} = \frac{9+3}{9} = \frac{12}{9} = \frac{4}{3}$

5) $\lim_{x \to 0^+} \left[\left(1 - \frac{1}{x}\right) \cdot e^x\right] = \left[\left(1 - \frac{1}{0^+}\right) \cdot e^0\right] = \left[1 - (+\infty)\right] \cdot 1 = 1 - \infty = -\infty$

6) $\lim_{x \to 10^+} \frac{1+x}{x(x-10)} = \frac{1+10}{10\,(10-10)} = \frac{11}{0^+} = +\infty$



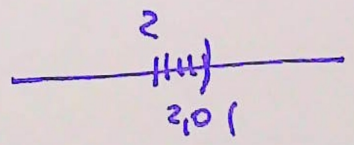
7) $\lim_{x \to 9^-} \frac{1+x}{x-9} = \frac{10}{0^-} = -\infty$

8) $\lim_{x \to -\frac{3}{2}} \frac{1}{(2x+3)^2} = \frac{1}{\left(2\left(-\frac{3}{2}\right)+3\right)^2} = \frac{1}{(0)^2} = \frac{1}{0^+} = +\infty$

9) $\lim_{x \to -\infty} \left[\left(\frac{1}{x} - 3\right)\left(2 - \frac{3}{x}\right)\right] = \left(\frac{1}{-\infty} - 3\right)\left(2 - \frac{3}{-\infty}\right) = (0-3)(2-0) = -3 \cdot 2 = -6$

10) $\lim_{x \to +\infty} \frac{1}{4+x^2} = \frac{1}{4+\infty} = \frac{1}{+\infty} = 0$

11) $\lim_{x \to 2^+} \frac{3}{2-x} = \frac{3}{0^-} = -\infty$



12) $\lim_{x \to +\infty} e^{-2x} = e^{-\infty} = 0$

13) $\lim_{x \to +\infty} (1 - \sqrt{x}) = 1 - \sqrt{+\infty} = 1 - \infty = -\infty$

14) $\lim_{x \to +\infty} \frac{1}{\sqrt{x+4}} = \frac{1}{+\infty} = 0$

15) $\lim_{x \to +\infty} \left(\frac{4}{5}\right)^x = \left(\frac{4}{5}\right)^{+\infty} = 0$; $\lim_{x \to -\infty} \left(\frac{4}{5}\right)^x = \left(\frac{4}{5}\right)^{-\infty} = \left(\frac{5}{4}\right)^{+\infty} = +\infty$