Determinare il dominio delle funzioni seguenti:

$$f(x) = \sqrt{-5+x} \quad f(x) = \sqrt{x^2+x}$$

$$f(x) = \sqrt{\frac{x}{x+1}} \quad f(x) = \sqrt{\frac{x-2}{|x|}}$$

$$f(x) = \log\Big(\frac{x}{x+2}\Big) \quad f(x) = \log\Big(\frac{3x}{x-5}\Big)$$

$$f(x) = \sqrt{log(x)} \quad f(x) = \sqrt{log^2(x) - 3log(x) + 5}$$

Stabilire se esiste la composizione $f \circ g$ oppure $g \circ f$ ed eventualmente calcolarlo.

$$f : R \to R \quad f(x) = \sin(x), \qquad g : R \to R \quad g(x) = x^2 + 3$$

$$f : R \to R \quad f(x) = x+3, \qquad g : [0, \infty[\to R \quad g(x) = \sqrt{x}$$

$$f : R \backslash \{0\} \to R \quad f(x) = \frac{1}{x}, \qquad g : R \to R \quad g(x) = x+2$$

$$f : R \backslash \{0\} \to R \quad f(x) = \frac{1}{x}, \qquad g : R \to R \quad g(x) = x^2+2$$

$$f : R \to R \quad f(x) = |x|+3, \qquad g : [0, \infty[\to R \quad g(x) = \sqrt{x}$$

Calcolare i limiti seguenti

$$\lim_{x\to 0} \frac{2x^3 - 3x^2 + 5x}{x^4 - x} \qquad \lim_{x\to +\infty} \frac{2x^3 - 3x^2 + 5x}{x^4 - x} \qquad \lim_{x\to -\infty} \frac{2x^4 - 3x^3 + 5x}{x^6 - x^2}$$

$$\lim_{x\to 0^+} \frac{2x^5 - \sin(x) + 5x^2}{x^2 - x} \qquad \lim_{x\to 0^+} \frac{\sin(x + x^4)}{x^3 - x} \qquad \lim_{x\to 0^+} \frac{\sin(3x)}{\tan(5x)}$$

$$\lim_{x\to 0^+} \frac{x\sin(3x) + x^4}{cos(x) - 1} \qquad \lim_{x\to +\infty} \frac{3 + 2\sqrt{x}}{\sqrt{x} - \sin(x)} \qquad \lim_{x\to 0^+} \frac{\sin(x^2)}{cos(x) - 1}$$

$$\lim_{x\to 0^+} \frac{\log(1 - x^2)}{x(e^{3x} - 1)} \qquad \lim_{x\to 0^+} \frac{\sqrt{1+x} - 1}{e^{3x} - 1}$$

$$\lim_{x\to 0^+} \frac{\log(2 - \cos(x))}{\sin^2(x)} \qquad \lim_{x\to 0^+} \frac{\log(\cos(x))}{\tan(x)\sin(x)} \qquad \lim_{x\to 0^+} \frac{\exp(\sin^2(x))}{\log(1 + 3x^2)}$$