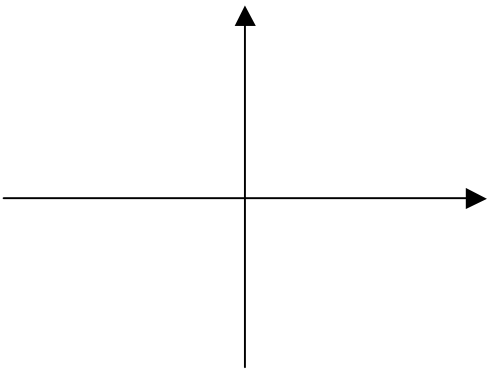
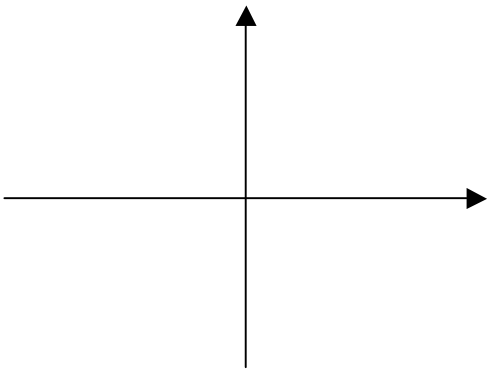
Corsi di Laurea della Facoltà di Agraria
A.A. 2006/2007
Matematica
Esercizi del 2 novembre 2006

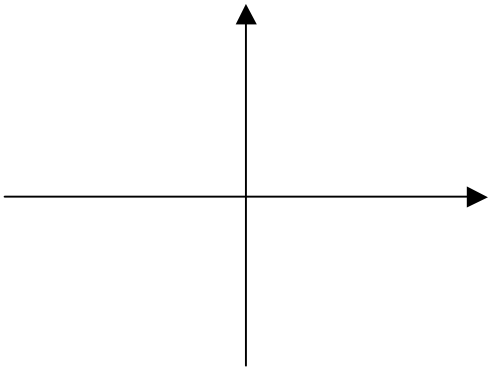
Esercizio 1. Rappresentare graficamente le informazioni fornite dai seguenti limiti:



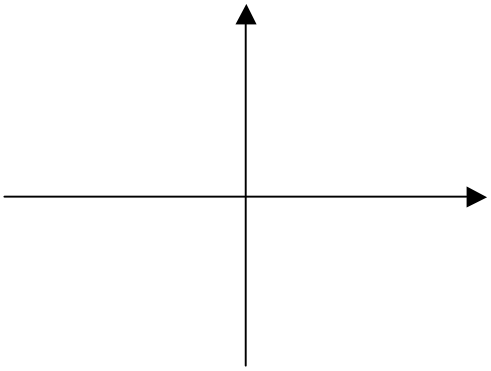
$\lim_{x\to 3} f(x) = 2$



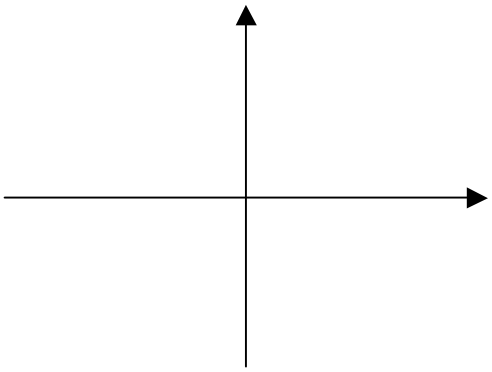
$\lim_{y\to -\infty} f(y) = -1$



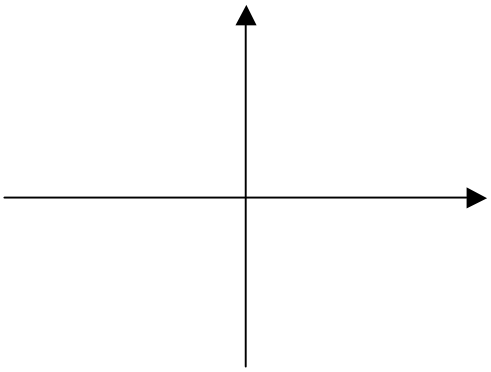
$\lim_{t\to +\infty} f(t) = -\infty$



$\lim_{x\to (-2)^+} f(x) = +\infty$



$\lim_{z\to 2^-} f(z) = -\infty$



$\lim_{w\to 1^+} f(w) = 2, \quad \lim_{w\to 1^-} f(w) = 3$

Esercizio 2. Calcolare il valore dei seguenti limiti (di funzioni continue):

$$\lim_{z\to -1}(z^3+3z-5), \qquad \lim_{x\to 0}\frac{5-\operatorname{sen} x}{\sqrt{x+5}}, \qquad \lim_{w\to 4}\sqrt{\frac{w+3}{w-3}},$$

$$\lim_{x\to 2}\frac{x-3x^2+1}{x^2-3x+5}, \qquad \lim_{y\to 1}(3^{2y+1}-5\operatorname{arctg} y), \qquad \lim_{y\to -1}\frac{4|y-3|+\sqrt{5+y}}{y+\ln(2+y)},$$

$$\lim_{t\to \pi}\frac{t-3\operatorname{sen} t}{2\cos t+1}, \qquad \lim_{x\to 2}\frac{\operatorname{arcsen}(1/x)-\arccos(x/2)}{x^2-x}, \qquad \lim_{w\to 2}\frac{\operatorname{sen}(\pi\cos(\pi w))}{3w-\operatorname{arctg}(w-2)}.$$

Esercizio 3. Calcolare il valore dei seguenti limiti (forme non indeterminate):

$$\lim_{w\to +\infty}(e^w+w^7), \qquad \lim_{x\to -\infty}\left(\frac{4}{x^2}-3^x\right), \qquad \lim_{t\to +\infty}5^t\ln(t^2+t),$$

$$\lim_{t\to 0^+}5^t\ln(t^2+t), \qquad \lim_{y\to +\infty}(y^3\,2^{3y+1}), \qquad \lim_{x\to +\infty}\frac{\operatorname{arctg} x}{x^2+1}.$$

Esercizio 4. Calcolare ove possibile il valore dei seguenti limiti (forma $\frac{L}{0}$), calcolando eventualmente i relativi limiti destro e sinistro:

$$\lim_{x\to 0}\frac{2x-3}{x^2}, \qquad \lim_{t\to 1}\frac{t^2+4}{t-1}, \qquad \lim_{y\to -2}\frac{2y^2-3y-4}{(y+2)^2},$$

$$\lim_{z\to 1}\frac{5z-1}{\ln z}, \qquad \lim_{w\to \pi}\frac{3-2\cos w}{\operatorname{sen} w}, \qquad \lim_{x\to 1}\frac{1+3x}{x^2-3x+2}.$$

Esercizio 5. Calcolare il valore dei seguenti limiti (polinomi, funzioni razionali):

$$\lim_{t\to +\infty}(3t^2-12t+5), \qquad \lim_{y\to +\infty}(3+y^2-4y^2), \qquad \lim_{x\to -\infty}(7x^2-x^3+2x-1),$$

$$\lim_{x\to +\infty}\frac{7x^2+x-1}{x^3+1}, \qquad \lim_{z\to -\infty}\frac{2z^3+z-5}{3z^2-z+2}, \qquad \lim_{x\to +\infty}\frac{3x-x^2+1}{3x^2-2x+2},$$

$$\lim_{w\to -\infty}\frac{4w^3+w^2-2}{3w^3-5w}, \qquad \lim_{s\to +\infty}\frac{4+5s}{3s^2+1}, \qquad \lim_{x\to +\infty}\frac{4x^3-5}{x^2+2x-1}.$$