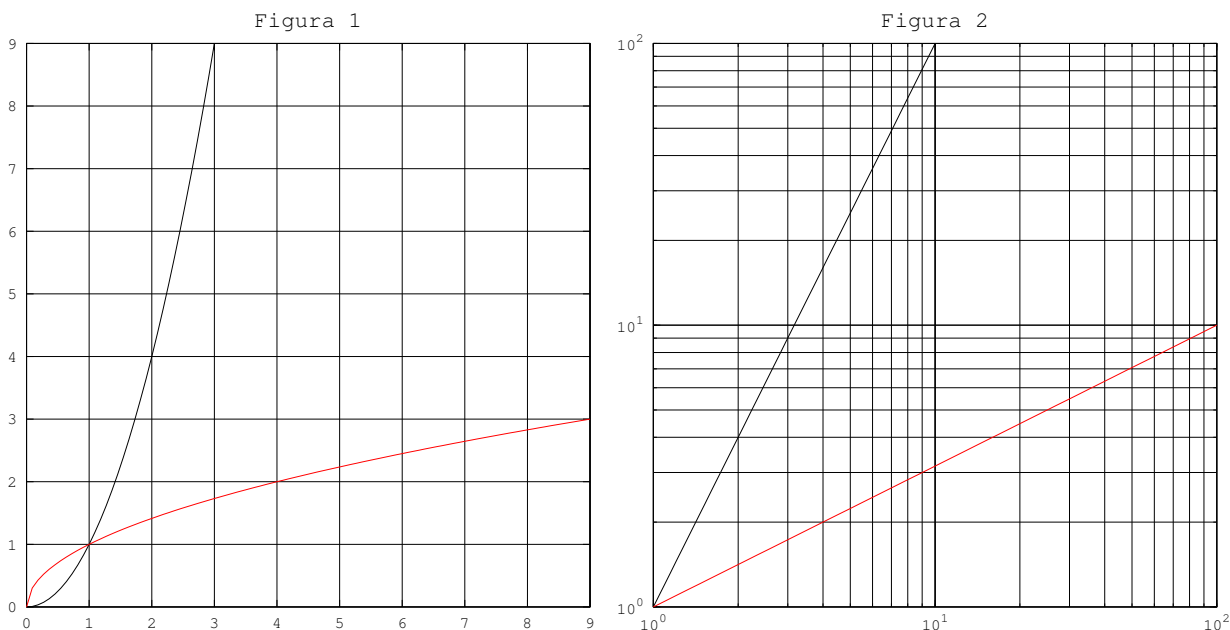


1. Disegnate i grafici delle funzioni  $y = f(x) = x^2$  e  $y = g(x) = \sqrt{x}$  per  $x \geq 0$  nel sistema di riferimento  $(x, y)$  della figura 1 e per  $x \geq 1, y \geq 1$  in scala logaritmica nel sistema di riferimento  $(X, Y)$  ( $X = \log_{10} x, Y = \log_{10} y$ ) della figura 2.



2. Determina i valori di  $\alpha \in \mathbb{R}$  tali che:

(a)  $\cos \alpha = -1/2$ ; (b)  $\sin \alpha = -\sqrt{3}/2$ ; (c)  $\sin(2\alpha) = 1/\sqrt{2}$ ; (d)  $\tan \alpha = -\sqrt{3}$ .

(a)  $\pm \frac{2}{3}\pi + k2\pi, k \in \mathbb{Z}$ ; (b)  $-\frac{\pi}{3} + k2\pi, k \in \mathbb{Z}$  e  $\frac{4}{3}\pi + k2\pi, k \in \mathbb{Z}$ ;

(c)  $\frac{\pi}{8} + k2\pi, k \in \mathbb{Z}$  e  $\frac{3}{8}\pi + k2\pi, k \in \mathbb{Z}$ ; (d)  $-\frac{\pi}{3} + k\pi, k \in \mathbb{Z}$ .

3. Determina i seguenti valori:

(a)  $\arccos(-1/2)$ ; (b)  $\arcsin(-\sqrt{3}/2)$ ; (c)  $\frac{1}{2} \arcsin(1/\sqrt{2})$ ; (d)  $\arctan(-\sqrt{3})$ .

(a)  $\frac{2}{3}\pi$ ; (b)  $-\frac{\pi}{3}$ ; (c)  $\frac{\pi}{8}$ ; (d)  $-\frac{\pi}{3}$ .

4. Disegnate il grafico di ognuna delle seguenti funzioni assieme al grafico di  $y = \sin x$ ,  $-2\pi \leq x \leq 2\pi$ . (Usate per ognuna delle 8 funzioni un nuovo sistema di riferimento.)

$$y = \sin 2x$$

$$y = 2 \sin x$$

$$y = 2 + \sin x$$

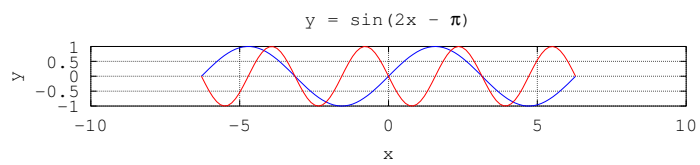
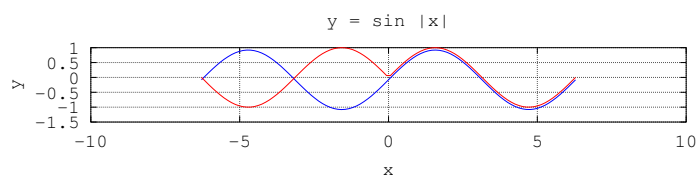
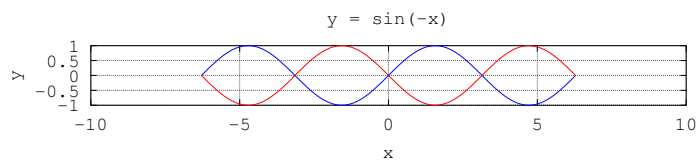
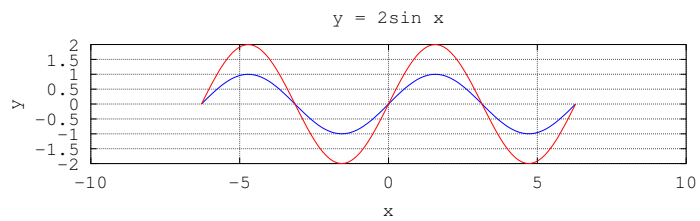
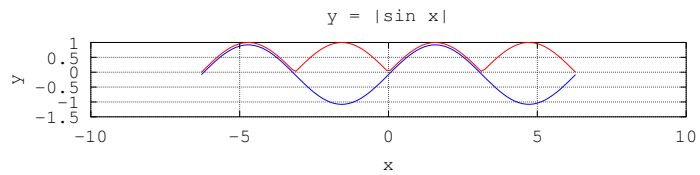
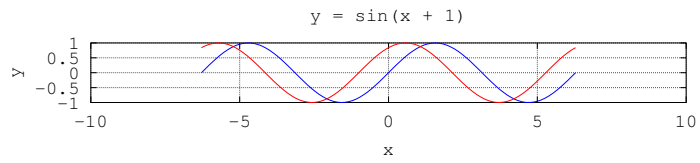
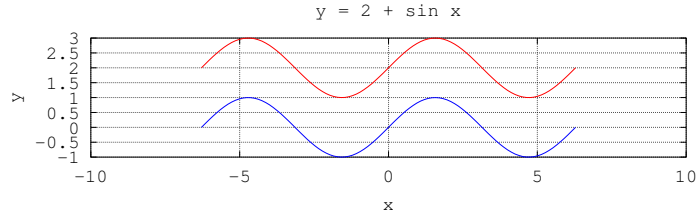
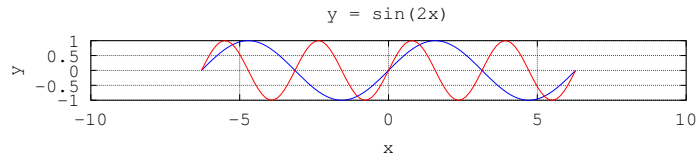
$$y = \sin(-x)$$

$$y = \sin(x+1)$$

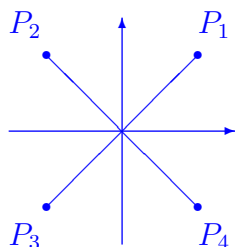
$$y = \sin|x|$$

$$y = |\sin x|$$

$$y = \sin(2x - \pi).$$



5. Siano  $(\theta, \rho)$  coordinate polari nel piano  $xy$  tali che  $x = \rho \cos \theta$  and  $y = \rho \sin \theta$ .  
 Calcolate le coordinate polari dei quattro punti  $P_1(1, 1)$ ,  $P_2(-1, 1)$ ,  $P_3(-1, -1)$   
 e  $P_4(1, -1)$  (disegno!) scegliendo (a)  $\theta \in ]-\pi, \pi]$ , (b)  $\theta \in [0, 2\pi[$ .  
 $\rho = \sqrt{2}$  per tutti i punti; (a)  $\theta_1 = \frac{1}{4}\pi$ ,  $\theta_2 = \frac{3}{4}\pi$ ,  $\theta_3 = -\frac{3}{4}\pi$ ,  $\theta_4 = -\frac{1}{4}\pi$ ;  
 (b)  $\theta_1 = \frac{1}{4}\pi$ ,  $\theta_2 = \frac{3}{4}\pi$ ,  $\theta_3 = \frac{5}{4}\pi$ ,  $\theta_4 = \frac{7}{4}\pi$ .



6. In un sistema di riferimento cartesiano nel piano il punto  $P$  abbia le coordinate  $(-1, -\sqrt{3})$ . Sia  $Q$  il punto che si ottiene ruotando  $P$  in senso orario attorno l'origine  $O$  di un angolo di  $60^\circ$ . Calcolare
- (a) le coordinate polari dei punto  $P$  e  $Q$ ,  $P(-\frac{2}{3}\pi, 2)$  o  $P(\frac{4}{3}\pi, 2)$ ,  $Q(\pi, 2)$ .  
 (b) le coordinate cartesiane del punto  $Q$ .  $Q(-2, 0)$ .