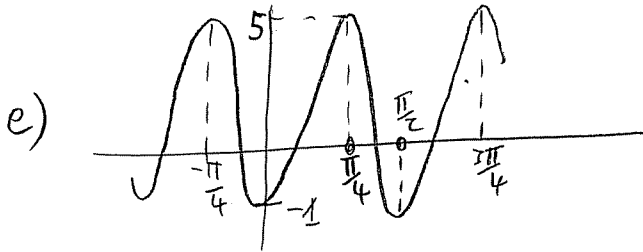
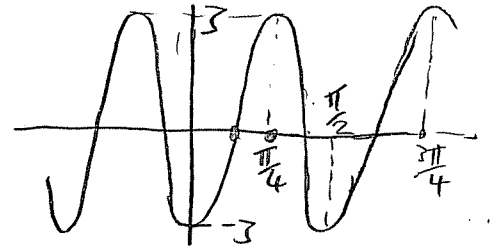
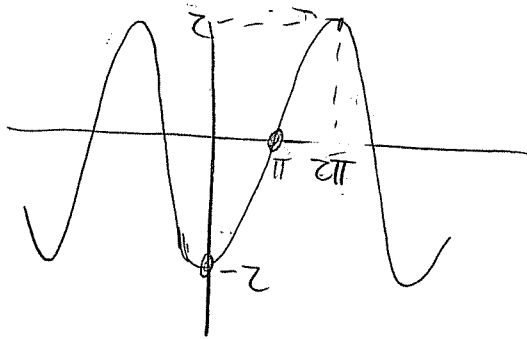


d)  $3 \cos(4x + \pi) = 3 \cos(4(x + \frac{\pi}{4}))$  so

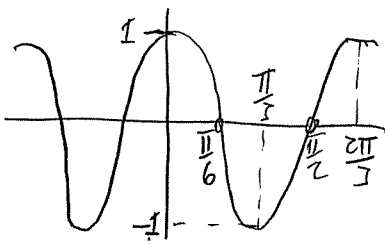


2)  $R = (0, 3)$ . The period is  $\frac{2\pi}{\frac{1}{2}} = 4\pi$  so  $T = (-\frac{4\pi}{2}, 3) = (-2\pi, 3)$   
 $Q = (\frac{4\pi}{4}, 3+2) = (\pi, 5)$ ,  $P = (3\pi, 1)$ ,  $S = (7\pi, 1)$

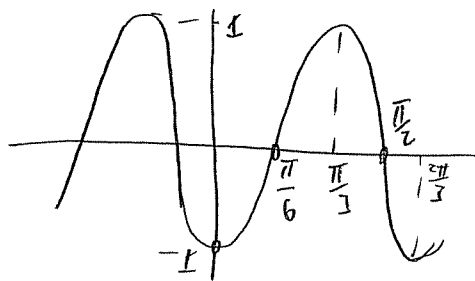
$2 \sin(\frac{1}{2}x - \frac{\pi}{2}) = 2 \sin(\frac{1}{2}(x - \pi))$  so



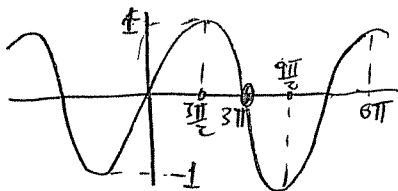
3) a)



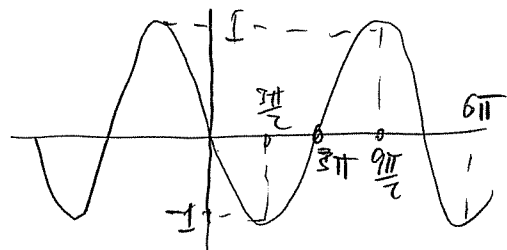
b)



c)

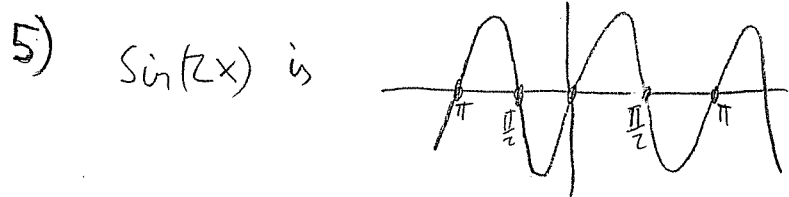


d)

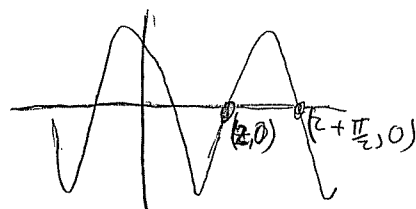


4) a)  $\frac{\pi}{3}$       b)  $\frac{5}{2}$       c) 0

d)  $A = \frac{5}{2}$ ,  $B = 6$ ,  $C = \frac{3}{2}$

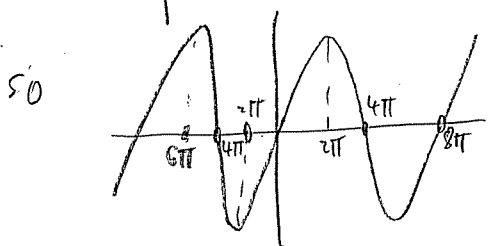
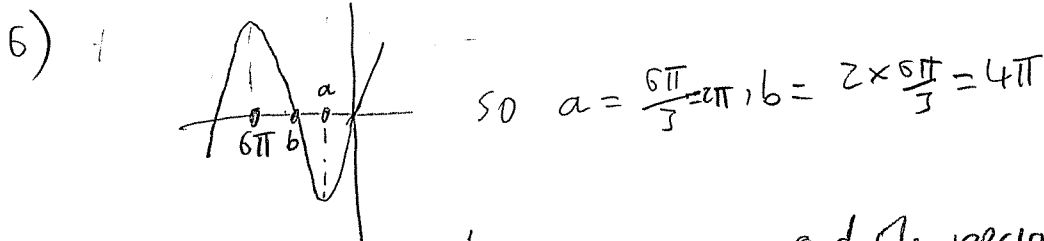


$\sin(2x-4) = \sin(2(x-2))$  is



$P = (2, 0)$  then  $Q = (2 + \frac{\pi}{4}, \frac{1}{2})$

$R = (2 + \frac{\pi}{2}, 0)$ ,  $S = (2 - \frac{3\pi}{2}, 0)$        $T = (2 - 2\pi, 0)$



and the period is  $8\pi$  so  $B = \frac{1}{4}$   
 the amplitude is  $\frac{1}{2}$  so  $A = \frac{1}{2}$   
 and  $C = 0$ .

7)  $P = (\frac{\pi}{3} + \frac{\pi}{3}, 0) = (\frac{2\pi}{3}, 0)$ ,  $Q = (\frac{2\pi}{3} + \frac{\pi}{3}, -2) = (\pi, -2)$

$R = (\frac{4\pi}{3}, 0)$ ,  $S = (-\frac{\pi}{3}, -2)$ ,  $T = (-\frac{4\pi}{3}, 0)$