Higher Homework 06

1) Express these in radians.

a) 60° b) 135° c) 300° d) 12°

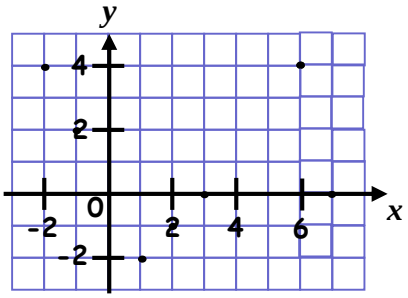
2) Express these in degrees.

a) $\frac{\pi}{5}$ radians b) $\frac{5\pi}{3}$ radians c) $\frac{7\pi}{10}$ radians c) $\frac{123\pi}{60}$ radians

3) Part of the graph of $y = f(x)$ is shown in the diagram. On separate diagrams, sketch the graphs of a) $y = f(x + 1)$ b) $y = -2f(x)$

Indicate on each graph the images of O, A, B, C and D.

A (1,-2) B (3,0) C (6,4) D (7,0)



4) Solve,

a) $2 \sin 3x = 1$ for $0 \leq x \leq 360^\circ$.

b) $2 \cos 4x + \sqrt{3} = 0$ for $0 \leq x \leq 180^\circ$.

c) $\sqrt{3} \tan 2x = -1$ for $0 \leq x \leq 2\pi$.

5) Solve, giving your answers correct to one decimal place.

a) $5 \sin 3x + 2 = 4$ for $0 \leq x \leq 360^\circ$.

b) $7 \cos 5x + 3 = 1$ for $0 \leq x \leq 180^\circ$.

6) A triangle has vertices S (-4,3) , T (6,-9) and U (0,7).

a) Find the equation of the perpendicular bisector of the line ST.

b) Find the equation of the median from point U.

7) a) Write down the exact value of $\sin \frac{\pi}{3}$.

b) Write down the exact value of $\cos \frac{\pi}{3}$.

c) If $\tan x = 4 \sin \frac{\pi}{3} \cos \frac{\pi}{3}$, find the exact values for x for $0 \leq x \leq 2\pi$.

8) Two functions f and g are defined by,

$f(x) = 3x^2 + 4$ and $g(x) = \frac{1}{6}x - 7$

a) Find expressions for i) $f(g(x))$ ii) $g(f(x))$ iii) $f^{-1}(x)$ iv) $g^{-1}(x)$