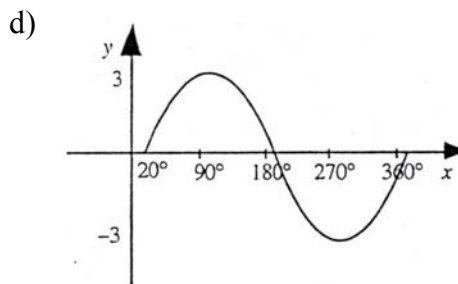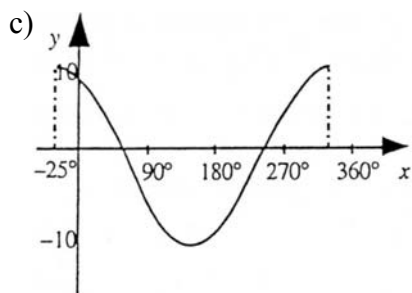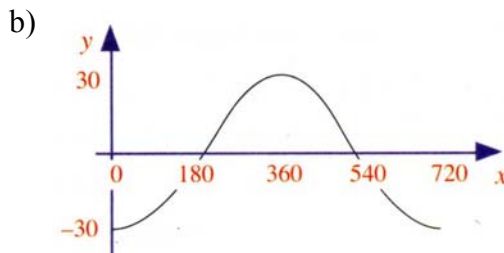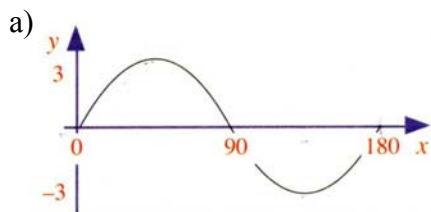# National 5 Homework : 1 year course
Trig Graphs & Equations

1. Write down the equations of the trigonometric functions associated with the following graphs:

a)

b)

c)

d)

2. Make neat sketches of the following trigonometric functions, clearly indicating the main points and features.
   a) $y = 5\sin 2x$ b) $y = 0.2\cos 5x$ c) $y = 10\sin(x + 20)$

3. Solve the following trigonometric equations in the range $0 \le x \le 360$
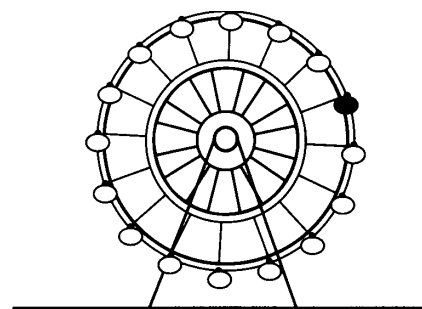   a) $4\sin x - 1 = 0$ b) $7\cos x + 4 = 0$ c) $10\tan x + 8 = 3\tan x + 4$

4. At the carnival, the height, H metres, of a carriage on the big wheel above the ground is given by the formula $H = 10 + 5\sin t^{\circ}$, t seconds after turning.

   a) Find the height of the carriage above the ground after 10 seconds.

   b) The find **two** times during the first turn of the wheel when the carriage is 12.5 metres above the ground.

> Remember:- $\sin^2 x + \cos^2 x = 1$ and $\tan x = \dfrac{\sin x}{\cos x}$

4. Simplify the following using the above 2 identities:-
   a) $15\sin^2 x + 15\cos^2 x$ b) $\dfrac{-3\sin x}{4\cos x}$ c) $\dfrac{1 - \sin^2 x}{4\cos^2 x}$