1. Trigometry 2

1. Solve the equation: (2 mks)

$$Sin\,5/2\,X = -1/2 \text{ for } 0^0 \le X \le 180^0$$

2. (a) Complete the table below, leaving all your values correct to 2 d.p. for the functions y = cos x and y = 2cos (x + 30)^0 (2 mks)

X^0	0^0	60^0	120^0	180^0	240^0	300^0	360^0	420^0	480^0	540^0
cosX	1.00			-1.00		0.50				
2cos(x+30)	1.73		-1.73		0.00					

(b) For the function y = 2cos(x+30)^0

State:

(i) The period (1 mk)

(ii) Phase angle (1 mk)

(c) On the same axes draw the waves of the functions y = cos x and y = 2cos(x+30)^0 for $0^0 \le x \le 540^0$. Use the scale 1cm rep 30^0 horizontally and 2 cm rep 1 unit vertically (4 mks)

(d) Use your graph above to solve the inequality $2\cos(x+30^0) \le \cos x$ (2 mks)

3. Find the value of x in the equation.
Cos(3x - 180^o) = $\frac{\sqrt{3}}{2}$ in the range $O^o \le x \le 180^o$ (3 marks)

4. Given that $\tan\theta = \frac{11}{60}$ and ɵ is an acute angle, find without using tables cos (90 – ɵ)

(2mks)

5. Solve for ɵ if -¼ sin (2x + 30) = 0.1607, $0 \le ɵ \ge 360^0$ (3mks)

6. Given that Cos θ = $^5/_{13}$ and that $270^0 \le \theta \le 360^0$, work out the value of Tan θ + Sin θ without using a calculato or mathematical tables. (3 marks)

7. Solve for x in the range $0^0 \le x \le 180^0$ (4mks)

$-8\sin^2 x - 2\cos x = -5.$

8. If tan x^o = $^{12}/_5$ and x is a reflex angle, find the value of 5sin x + cos x without using a calculator or mathematical tables

9. Find θ given that 2 cos 3θ -1 = 0 for $0^o \le \theta \le 360^o$

10. Without a mathematical table or a calculator, simplify: **$\frac{\text{Cos300}^o \text{ x Sin120}^o}{\text{Cos330}^o - \text{Sin 405}^o}$** giving your answer in rationalized surd form.

11. Express in surds form and rationalize the denominator.

$$\frac{1}{\text{Sin } 60^o \text{ Sin } 45^o - \text{ Sin } 45^o}$$

12. Simplify the following without using tables;
Tan 45 + cos 45sin 60

13. Simplify the following surds in the form of **a** + $\sqrt{\mathbf{b}}$ **c** where **a, b,** and **c** are constants

$$\frac{5}{2\sqrt{2}-\sqrt{5}} + \frac{2}{2\ 2-\sqrt{5}}$$

14. John cycles from shopping centre **A** on a bearing of 120^{o} for 5 km to shopping centre **B**. He then cycles on a bearing of 200^{0} for 7 km to the shopping centre **C**. Calculate to 1 decimal place.
a) The direct distance from A to C.
b) The bearing of A from C.
c) Bearing of B from C.