Year 2 Pure Chapter 5: Radians (Trig Equations) – Exam Questions (Total Marks 22)

1)

Solve the following equations for θ, giving your answers to 3 significant figures where appropriate, in the intervals indicated.

a $3\sin\theta = 2, 0 \leqslant \theta \leqslant \pi$

b $\sin\theta = -\cos\theta, -\pi \leqslant \theta \leqslant \pi$

(2 marks each question)

1) Continued

Solve the following equations for θ, giving your answers to 3 significant figures where appropriate, in the intervals indicated.

c $\tan\theta + \frac{1}{\tan\theta} = 2, 0 \leqslant \theta \leqslant 2\pi$

d $2\sin^2\theta - \sin\theta - 1 = \sin^2\theta, -\pi \leqslant \theta \leqslant \pi$

(3 marks each questions)

2)

Find the values of x in the interval $0 < x < \frac{3\pi}{2}$ which satisfy the equation

$$\frac{\sin 2x + 0.5}{1 - \sin 2x} = 2$$

(6 marks)

3)

a Show that the equation

$$5\sin x = 1 + 2\cos^2 x$$

can be written in the form

$$2\sin^2 x + 5\sin x - 3 = 0$$ **(2 marks)**

b Solve, for $0 \leqslant x < 2\pi$,

$$2\sin^2 x + 5\sin x - 3 = 0$$ **(4 marks)**