C2/B Trigonometry: Solving Equations

① (a) Find all values of x between 0° and 360° satisfying

$$\tan x = -0\cdot 4.$$ [2]

(b) Find all values of x between 0° and 180° satisfying

$$\cos 3x = \frac{1}{2}.$$ [4]

(c) Find all values of θ between 0° and 360° satisfying

$$2 \cos^2\theta + 3 \sin\theta = 0.$$ [5]

② Find all values of θ in the interval $0° \leqslant \theta \leqslant 360°$ satisfying

(a) $4 \cos^2\theta - \cos\theta = 2 \sin^2\theta,$ [6]

(b) $\tan\theta = -\sqrt{3},$ [2]

(c) $\sin 2\theta = \frac{1}{2}.$ [3]

③ (a) Find the values of x in the range $0 \leqslant x \leqslant 360°$ satisfying

$$8 \cos^2 x + 2 \sin x - 7 = 0.$$ [6]

(b) Find the values of x in the range $0° \leqslant x \leqslant 180°$ satisfying

$$\tan 2x = 1.$$ [3]

④ (a) Find all values of x in the range $0° \leqslant x \leqslant 360°$ satisfying

$$2 \sin^2 x + \cos x - 1 = 0.$$ [6]

(b) Find all values of x in the range 0° to 180° satisfying

$$\tan 3x = 1.$$ [4]

⑤ (a) Showing all your working, find all the values of θ between 0° and 360° satisfying

$$6 \sin^2\theta + \cos\theta - 5 = 0.$$ [6]

(b) Find all the values of x in the interval $0° \leq x \leq 180°$ satisfying the equation

$$\tan 3x = -1.$$ [4]

$$2 \sin^2 x + 3 \cos x = 0$$

in the interval $0 \le x \le 360°$. [6]

(7)

(a) Find the values of x between $0°$ and $360°$ satisfying the equation

$$8 \cos^2 x = 7 - 2 \sin x.$$ [6]

(b) Find the values of x in the range $0 \le x \le 180°$ satisfying the equation

$$\tan x = 2 \sin x.$$ [5]

(8)

(a) Find all the values of x in the range $0°$ to $360°$ satisfying the equation

$$5\cos^2 x + 4\sin x - 4 = 0.$$ [5]

(b) Find all the values of θ in the range $0°$ to $360°$ satisfying

$$\sqrt{3} \tan \theta = 2 \sin \theta.$$ [5]

(9)

(a) Find all the values of x in the range $0° \le x \le 360°$ satisfying

$$13\sin^2 x + \cos^2 x = 5\sin x + 3.$$ [6]

(b) Find all values of x in the range $0° \le x \le 180°$ satisfying

$$\tan 2x = \sqrt{3}.$$ [3]

(10)

(a) Find the values of x between $0°$ and $360°$ satisfying the equation

$$6\cos^2 x + \sin x = 4.$$ [6]

(b) Find the values of θ between $0°$ and $180°$ satisfying the equation

$$\tan(3\theta - 15°) = 1.$$ [4]

(11)

(a). Find all the values of x in the range $0°$ to $360°$ satisfying the equation

$$2 \cos^2 x = 1 - \sin x.$$ [6]

(b) Find all the values of x in the range $0°$ to $180°$ satisfying the equation

$$\cos 3x = \frac{\sqrt{3}}{2}.$$ [3]