

5 (a) Show that $\tan^4 \theta - 1 \equiv \frac{1 - 2 \cos \theta}{\cos^4 \theta}$.

[3]

[illegible]

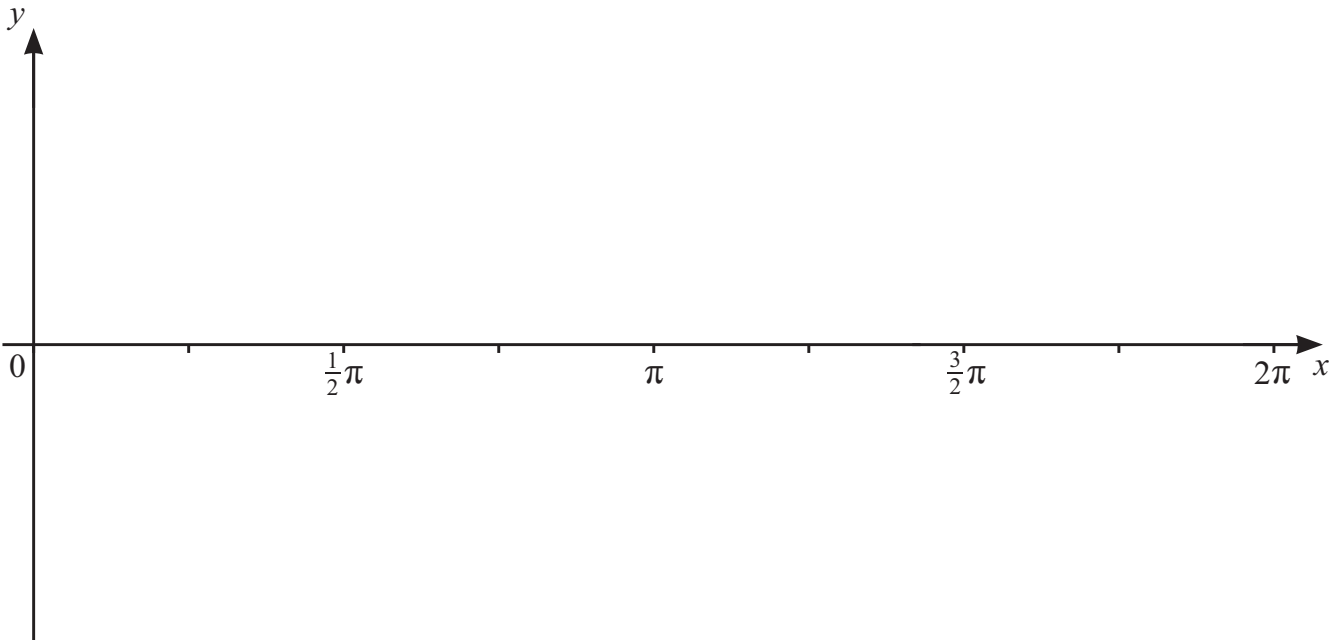
(b) Hence solve the equation $\cos^2\theta(\tan^4\theta - 1) = 7$ for $0^\circ < \theta < 180^\circ$. [4]

[illegible]

6

(a) Sketch the graph of $y = 3 \sin x + 2$ for $0 \leq x \leq 2\pi$.

[2]



(b) Determine the number of solutions in the interval $0 \leq x \leq 2\pi$ of each of the following equations.

(i) $3 \sin x + 2 = x$

[1]

(ii) $3 \sin x + 2 = 5 - x$

[1]

2

(c) Solve the equation $3 \sin x + 2 = 5 \cos^2 x - 1$ for $0 \leq x \leq 2\pi$. [5]

[5]

[illegible]

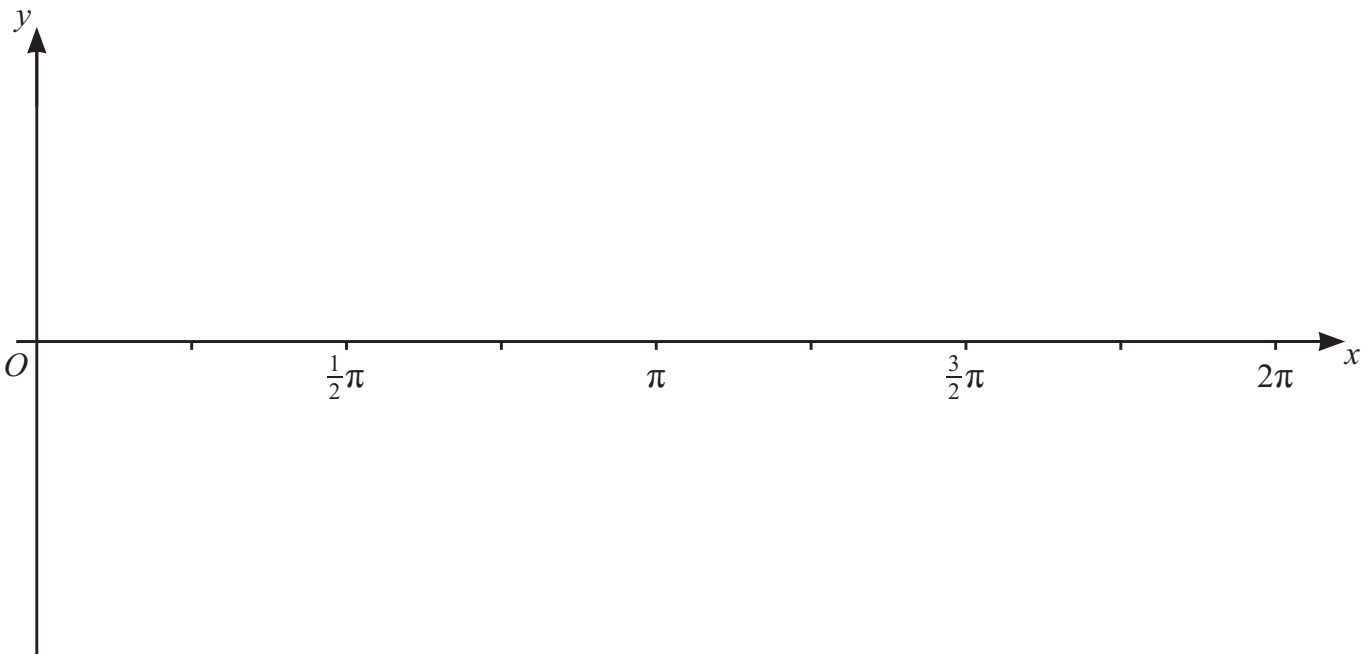
1 Solve the equation $6 \sin \theta = 1 + \frac{2}{\sin \theta}$ for $-180^\circ < \theta < 180^\circ$.

[4]

5 The equation of a curve is $y = 4 \cos 2x + 3$ for $0 \leq x \leq 2\pi$.

(a) State the greatest and least possible values of y . [2]

(b) Sketch the curve. [2]



(c) Hence determine the number of solutions of the equation $4 \cos 2x + 3 = 2x - 1$ for $0 \leq x \leq 2\pi$. [1]

[3]

[illegible]

(b)

7