Chapter (9) Trigonometry

0606/12/F/M/19

1. (a) Solve $sin\, x\, cos\, x = 0.5\, tan\, x$ for $0° \leq x \leq 180°$.

[3]

(b) (i) Show that $sec\,\theta - \frac{sin\theta}{cot\,\theta} = cos\,\theta$.

[3]

(ii) Hence solve $sec\,3\theta - \frac{sin\,3\theta}{cot\,3\theta} = 0.5$ for $-\frac{2\pi}{3} \leq x \leq \frac{2\pi}{3}$, where θ is in radians,

0606/13/M/J/19

2. (a) (i) Show that $sec\,\theta - \frac{tan\,\theta}{cose\theta} = cos\theta$.

[3]

(ii) Solve $sec\,2\theta - \frac{tan\,2\theta}{cosec\,2\theta} = \frac{\sqrt{3}}{2}$ for $0° \leq \theta \leq 180°$.

[3]

(b) Solve $2sin^2(\phi + \frac{\pi}{3}) = 1$ for $0 \leq \phi \leq 2\pi\ radians$.

[4]

0606/21/M/J/19

3. (a) (i) Show that $\frac{cosec\,\theta - cot\,\theta}{sin\,\theta} = \frac{1}{1+cos\,\theta}$.

[4]

(ii) Hence solve $\frac{cosec\,\theta - cot\,\theta}{sin\,\theta} = \frac{5}{2}$ for $180° < \theta < 360°$.

[2]

(b) Solve $tan\,(3\phi - 4) = -\frac{1}{2}$ for $0 \leq \phi \leq \frac{\pi}{2}$ $radians$.

[3]

0606/22/M/J/19

4. (a) Solve $6sin^2x - 13\,cosx = 1$ for $0° \leq x \leq 360°$.

[4]

(b) (i) Show that, for $-\frac{\pi}{2} < y < \frac{\pi}{2}$, $\frac{4\tan y}{\sqrt{1+\tan^2 y}}$ can be written in the form $a \sin y$, where *a* is an integer.

[3]

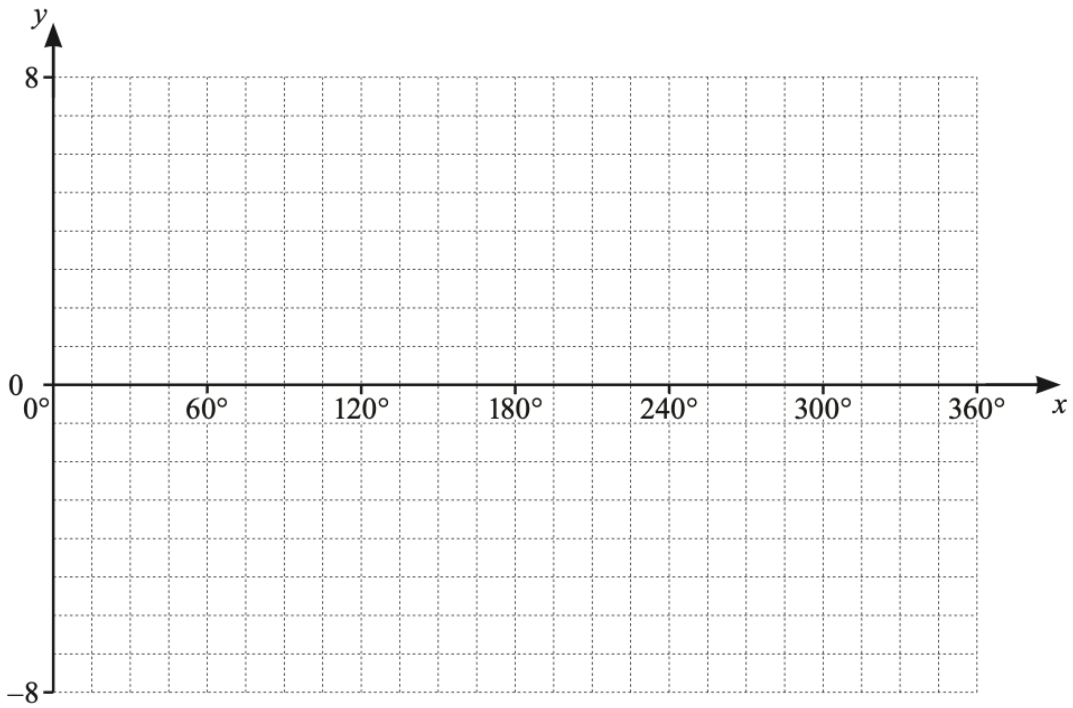
(ii) Hence, solve $\frac{4\tan y}{\sqrt{1+\tan^2 y}} + 3 = 0$ for $-\frac{\pi}{2} < y < \frac{\pi}{2}$ $radians$.

[1]

0606/23/M/J/19

5. The function f is defined, for $0° \leq x \leq 360°$,by $f(x) = 4 + 3sin\,2x$.

(i) Sketch the graph of $y = f(x)$ on the axes below.



[3]

(ii) State the period of f.

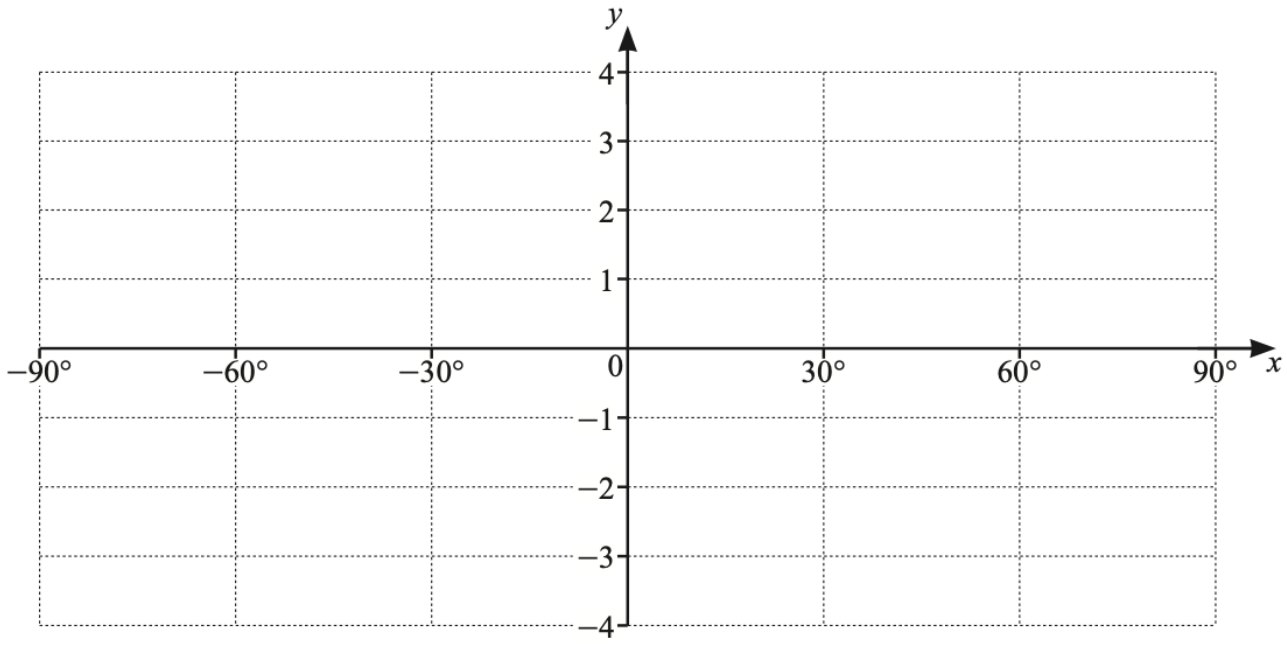
[1]

(iii) State the amplitude of f.

[1]

0606/12/O/N/19

6. (i) On the axes below, sketch the graph of $y = 2cos\,3x - 1$ for $-90° \leq x \leq 90°$.



[3]

(ii) Write down the amplitude of $2cos\,3x - 1$.

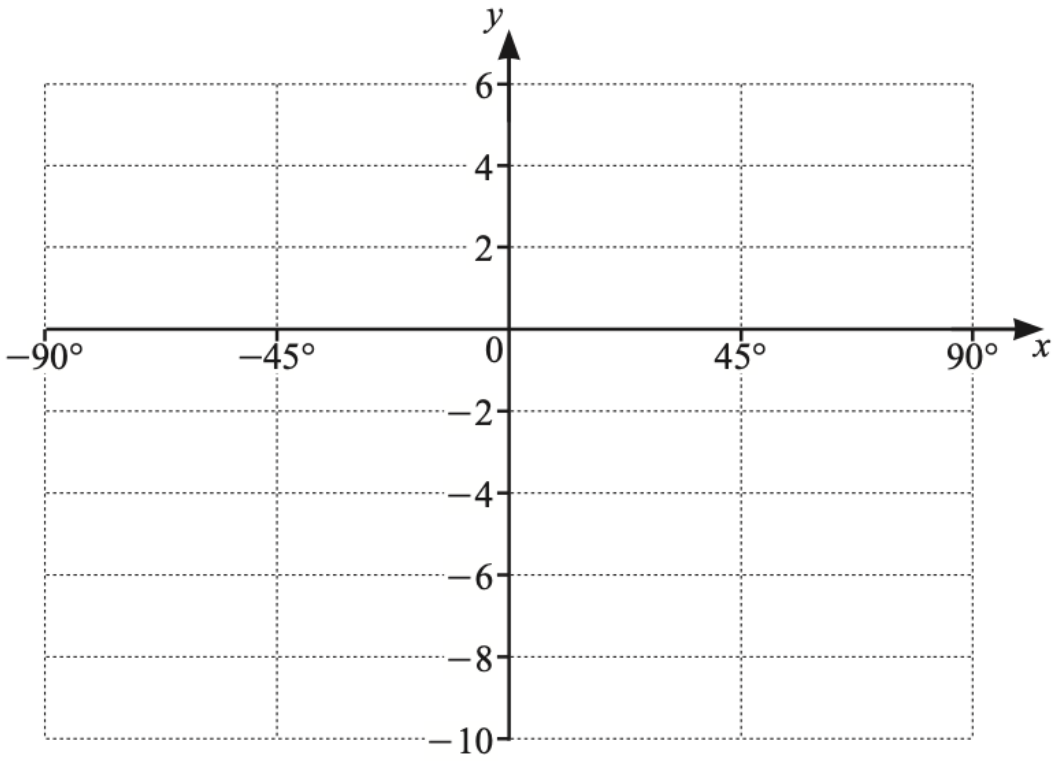
[1]

(iii) Write down the period of $2cos\,3x - 1$.

[1]

0606/13/O/N/19

7. (i) On the axes below, sketch the graph of $y = 5cos\,4x - 3$ for $-90° \leq x \leq 90°$.



[4]

(ii) Write down the amplitude of *y*.

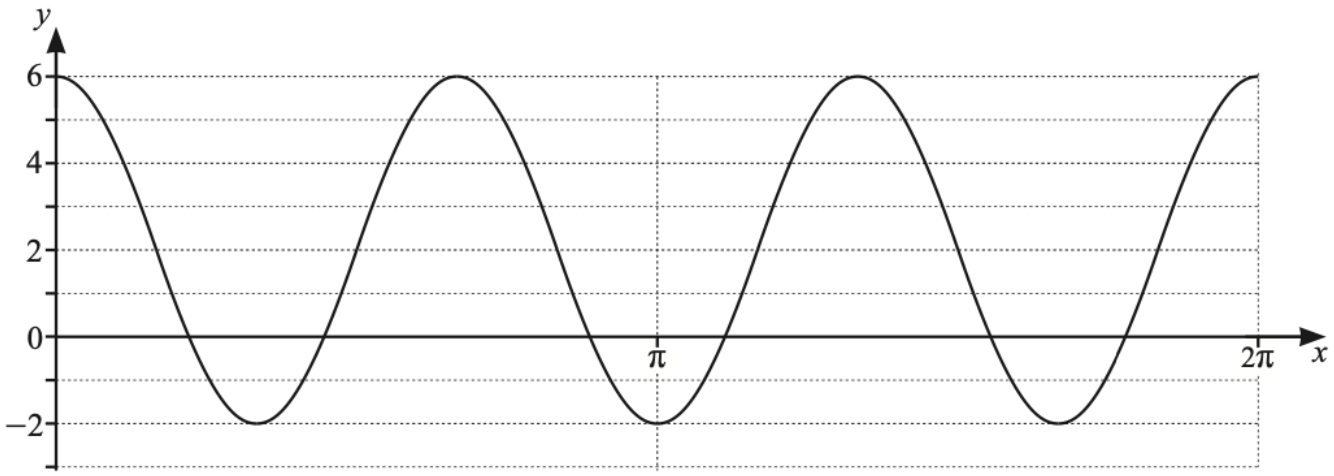
[1]

(iii) Write down the period of *y*.

[1]

0606/21/O/N/19

8.



The figure shows part of the graph of $y = p + q\cos rx$. Find the value of each of the integers p, q and r.

$p =$ $q =$ $r =$

[3]

0606/22/O/N/19

9. (i) Show that $\frac{tan\, x}{1+sec\, x} + \frac{1+sec\, x}{tan\, x} = \frac{2}{sin\, x}$.

[5]

(ii) Hence solve the equation $\frac{tan\,x}{1+sec\,x} + \frac{1+sec\,x}{tan\,x} = 1 + 3sinx$ for $0° \leq x \leq 180°$.

[4]

0606/23/O/N/19

10. (i) Show that $\frac{cosec\ x - cot\ x}{1 - cos\ x} = cosec\ x$.

[3]

(ii) Hence solve $\frac{cosec\ x - cot\ x}{1 - cos\ x} = 2$ for $0° < x < 180°$.

[2]