SOLVING TRIGONOMETRIC EQUATIONS

R7 I have revised solving basic trigonometric equations in degrees and radians.

1. Solve the equations:

(a) $5\tan x° - 6 = 2, \quad 0 \leq x \leq 360.$

(b) $7\sin x° + 1 = -5, \quad 0 \leq x \leq 360.$

(c) $4\cos x° + 3 = 0, \quad 0 \leq x \leq 360.$

(d) $3\tan x + 3 = 7, \quad 0 \leq x \leq 2\pi.$

(e) $4\sin x - 2 = -3, \quad 0 \leq x \leq 2\pi.$

(f) $9\cos x - 5 = 0, \quad 0 \leq x \leq 2\pi.$

2. Solve the equations:

(a) $9\tan 2x° - 5 = 3, \quad 0 \leq x \leq 180.$

(b) $4\sin 3x° + 1 = -2, \quad 0 \leq x \leq 360.$

(c) $3\cos 2x° + 2 = 0, \quad 0 \leq x \leq 360.$

3. Solve the equations:

(a) $\tan(x + 30)° = 3, \quad 0 \leq x \leq 360.$

(b) $5\sin(x + 10)° + 3 = -1, \quad 0 \leq x \leq 360.$

(c) $4\cos(x + 26)° + 3 = 0, \quad 0 \leq x \leq 360.$

(d) $\sqrt{3}\tan\left(x + \frac{\pi}{5}\right) + 1 = 0, \quad 0 \leq x \leq 2\pi.$

(e) $6\sin(x + 2) - 2 = 1, \quad 0 \leq x \leq 2\pi.$

(f) $\sqrt{2}\cos\left(x + \frac{\pi}{6}\right) + 1 = 0, \quad 0 \leq x \leq 2\pi.$

NR3 I can solve trigonometric equations in the context of a problem.

1. Solve the equation $\sin 2x° - \cos x° = 0$, in the interval $0 \leq x < 180$.

2. Solve the equation $\sin x° - \sin 2x° = 0$, in the interval $0 \leq x < 360$.

3. Solve the equation $3\cos 2x + 10\cos x - 1 = 0$, in the interval $0 \leq x < 2\pi$.

4. Solve the equation $\cos 2x° + 2\sin x° = \sin^2 x°$, in the interval $0 \leq x < 360$.

5. Solve the equation $2\cos 2x - 5\cos x - 4 = 0$, in the interval $0 \leq x < 2\pi$.

6. Solve the equation $\tan^2 x = 3$, in the interval $0 \leq x < \pi$.

7. Solve the equation $\sin\theta = 4\cos\theta$, in the interval $0 \leq x < 2\pi$.

8. **(a)** Express $3\sin x + 4\cos x$ in the form $k\sin(x + a)$ where $k > 0$ and $0 \leq a < 2\pi$.

(b) Hence solve the equation $3\sin x + 4\cos x - 3 = 0$ in the interval $0 \leq x < 2\pi$.

9. **(a)** Express $5\sin x° + 3\cos x°$ in the form $k\cos(x - a)°$ where $k > 0$ and $0 \leq a < 360$.

(b) Hence solve the equation $5\sin x + 3\cos x = 4$ in the interval $0 \leq x < 360$.

10. Two curves have equations $y = 6\cos x°$ and $y = \sin 2x°$.

Find the coordinates of the points of intersection in the range $0 \leq x < 360$.

11. Two curves have equations $y = -3\cos 2x°$ and $y = \cos x° + 1$.

Find the coordinates of the points of intersection in the range $0 \leq x < 180$.

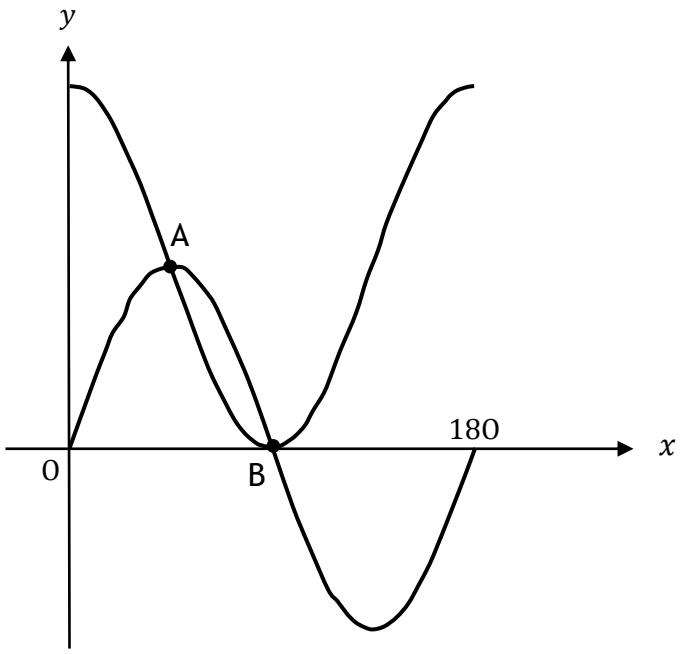
12. A curves has the equation $= \cos 2x° - 3\cos x° + 2$.

Find the coordinates of the points where the curve cuts the x-axis in the range $0 \leq x < 360$.

13. A curves has the equation $= \sin 2x° + \cos x°$.

Find the coordinates of the points where the curve cuts the x-axis in the range $0 \leq x < 360$.

14. The graph shows two curves which have equations $y = 2\cos^2 x°$ and $y = \sin 2x°$ in the range $0 \leq x < 180$.



Find the coordinates of A and B, the points of intersection between the two curves.