1 Express $6\cos 2\theta + \sin\theta$ in terms of $\sin\theta$.

Hence solve the equation $6\cos 2\theta + \sin\theta = 0$, for $0° \leqslant \theta \leqslant 360°$. **[7]**

2 **(i)** Show that $\cos(\alpha+\beta) = \dfrac{1-\tan\alpha\tan\beta}{\sec\alpha\sec\beta}$. **[3]**

(ii) Hence show that $\cos 2\alpha = \dfrac{1-\tan^2\alpha}{1+\tan^2\alpha}$. **[2]**

(iii) Hence or otherwise solve the equation $\dfrac{1-\tan^2\theta}{1+\tan^2\theta} = \dfrac{1}{2}$ for $0° \leqslant \theta \leqslant 180°$. **[3]**

3 Given the equation sin(+ 45°) = 2 cos [, show that sin + cos = 2 2 cos .Hence

solve, correct to 2 decimal places, the equation for 0° [√360°.

⩽ ⩽ **[6]**

4 Solve the equation $\tan(\theta + 45°) = 1 - 2\tan\theta$, for $0° \leqslant \theta \leqslant 90°$. **[7]**

5 Given that $\sin(\theta + \alpha) = 2\sin\theta$, show that $\tan\theta = \dfrac{\sin\alpha}{2 - \cos\alpha}$.

Hence solve the equation $\sin(\theta + 40°) = 2\sin\theta$, for $0° \leqslant \theta \leqslant 360°$. [7]

6 Solve the equation $2\cos 2x = 1 + \cos x$, for $0° \leqslant x < 360°$. [7]