| Question | Answer | Marks | Guidance |
|---|---|---|---|
| 7(a) | $\dfrac{(\sin\theta+2\cos\theta)(\cos\theta+2\sin\theta)-(\sin\theta-2\cos\theta)(\cos\theta-2\sin\theta)}{(\cos\theta-2\sin\theta)(\cos\theta+2\sin\theta)}$ | ***M1** | Obtain an expression with a common denominator |
| | $\dfrac{5\sin\theta\cos\theta+2\cos^2\theta+2\sin^2\theta-\left(5\sin\theta\cos\theta-2\sin^2\theta-2\cos^2\theta\right)}{\cos^2\theta-4\sin^2\theta}$ $= \dfrac{4\left(\cos^2\theta+\sin^2\theta\right)}{\cos^2\theta-4\sin^2\theta}$ | **A1** | |
| | $\dfrac{4}{\cos^2\theta-4\left(1-\cos^2\theta\right)}$ | **DM1** | Use $\cos^2\theta+\sin^2\theta=1$ twice |
| | $\dfrac{4}{5\cos^2\theta-4}$ | **A1** | **AG** |
| | | **4** | |
| 7(b) | $\dfrac{4}{5\cos^2\theta-4}=5$ leading to $25\cos^2\theta=24$ leading to $\cos\theta=\sqrt{\dfrac{24}{25}}\left[=(\pm)0.9798\right]$ | **M1** | Make $\cos\theta$ the subject |
| | $\theta=11.5°$ or $168.5°$ | **A1** **A1 FT** | FT on 180º – 1st solution |
| | | **3** | |