Question	Scheme	Marks	AOs
12(a)	$3\sin\theta\dfrac{\sin\theta}{\cos\theta}=4$	M1	1.1b
	$3(1-\cos^2\theta)=4\cos\theta$	M1	1.1b
	$3\cos^2\theta+4\cos\theta-3=0$ *	A1*	2.1
		(3)	
(b)	$3\cos^2 2x+4\cos 2x-3=0\Rightarrow\cos 2x=\dfrac{-4\pm\sqrt{16-4\times3\times(-3)}}{2\times3}$	M1	1.1b
	$(\cos 2x=)\ \dfrac{-2+\sqrt{13}}{3}$	A1	2.3
	$x=\dfrac{\cos^{-1}\left(\dfrac{-2+\sqrt{13}}{3}\right)}{2}$	dM1	1.1b
	awrt $28.8°$, awrt $151.2°$	A1	1.1b
		(4)	
			(7 marks)

Notes

(a)

M1: Uses $\tan\theta=\dfrac{\sin\theta}{\cos\theta}$

M1: Uses $\pm\sin^2\theta\pm\cos^2=\pm1$ to achieve an equation in terms of $\cos\theta$

A1*: Achieves the given answer $3\cos^2\theta+4\cos\theta-3=0$ with no errors seen including invisible brackets

(b)

M1: Attempts to solve $3\cos^2 2x+4\cos 2x-3=0$ by either completing the square or using the quadratic formula or using a calculator.

A1: Deduces $(\cos 2x=)\dfrac{-2+\sqrt{13}}{3}$ (the other root if found must be rejected / no other solutions found)

dM1: Attempts to find an angle in the given range for their solution to the quadratic using the correct processing. May be implied by awrt 29 or awrt 151.

A1: awrt $28.8°$, awrt $151.2°$ and no others in the range. The previous three marks must have been scored (answers with no working score no marks).