

Question	Scheme	Marks	AOs
12 (i)	Shows that statement is not true by use of a counter example E.g When $n = 5$, $n^2 - n + 5 = 25$ which is not a prime number	B1	2.4
		(1)	
(ii)	States $\tan \theta = \frac{\sin \theta}{\cos \theta}$	B1	1.2
	$\tan \theta + \frac{1}{\tan \theta} = \frac{\sin \theta}{\cos \theta} + \frac{\cos \theta}{\sin \theta} = \frac{\dots}{\sin \theta \cos \theta}$	M1	1.1b
	$= \frac{\sin^2 \theta + \cos^2 \theta}{\sin \theta \cos \theta} = \frac{1}{\sin \theta \cos \theta} *$	A1*	2.1
		(3)	
(4 marks)			
Notes:			

(i)

B1: Shows that statement is not true by use of a counter example.

A value of n must be stated or implied, the value of $n^2 - n + 5$ must be found and there must be a conclusion.

(ii)

B1: States $\tan \theta = \frac{\sin \theta}{\cos \theta}$ or $\frac{1}{\tan \theta} = \frac{\cos \theta}{\sin \theta}$

M1: Writes $\tan \theta + \frac{1}{\tan \theta}$ as $\frac{\sin \theta}{\cos \theta} + \frac{\cos \theta}{\sin \theta}$ and attempts to combine as a single fraction.

A1*: Completes proof using $\sin^2 \theta + \cos^2 \theta = 1$ with no errors or omissions.

An omission is $\tan = \frac{\sin}{\cos}$