

Question			Answer	Marks	AO	Guidance
6			DR			
			$\tan^2 x - 3 = 2 \tan x$	M1 [^]	3.1a	Multiplying through by $\tan x$
			$\tan^2 x - 2 \tan x - 3 = 0$	M1 [^]	1.1	Get all 3 terms of quadratic on one side and zero on the other
			$(\tan x - 3)(\tan x + 1) = 0$	M1 [*]	1.1	Solve 3 term quadratic to get both values of $\tan x$ Must see either use of the formula, factorisation or completing the square. Allow 1 error in method Condone missing ‘= 0’
			$\tan x = 3$, $\tan x = -1$			
			71.6°, 251.6°, 135°, 315°	A1 [^] A1 [*]	1.1 1.1	A1 [^] for any two roots correct (dep. on M2 [^]) A1 [*] for all roots with no additional solutions (dep. on M1 [*]) Accept 72 and 252
			Alternative solution			
			$\frac{\sin x}{\cos x} - 3 \frac{\cos x}{\sin x} = 2$	M1 [^]	3.1a	Use of $\tan x = \frac{\sin x}{\cos x}$
			$\sin^2 x - 2 \sin x \cos x - 3 \cos^2 x = 0$	M1 [^]	1.1	Get all 3 terms on one side and zero on the other
			$(\sin x - 3 \cos x)(\sin x + \cos x) = 0$	M1 [*]	1.1	Factorise to get both values of $\tan x$ Must see factorisation. Allow 1 error in method Condone missing =0
			$\tan x = 3$, $\tan x = -1$			
			71.6°, 251.6°, 135°, 315°	A1 [^] A1 [*]	1.1 1.1	A1 [^] for any two roots correct (dep. on M2 [^]) A1 [*] for all roots with no additional solutions (dep. on M1 [*]) Accept 72 and 252
				[5]		

Q6. This is another DR question. There are 2 solutions provided.

The first method involves multiplying through by $\tan x$ (M1) and the second method involves replacing $\tan x$ with $\sin x/\cos x$ and $\cot x$ with $\cos x/\sin x$ (M1). Both methods then involve getting an equation with 3 terms on one side and zero on the other (M1) and solving their 3-term equation AND get both values of $\tan x$ (M1). A correctly solved equation implies any missing M marks. They **must** solve the equation by a valid method (factorisation, formula or completing the square) to get the M1 here.