

6

(a)

DR

DR

Question			Answer	Marks	AO	Guidance
			$6(1 - \sin^2 \theta) = \frac{\sin \theta}{\cos \theta}(\cos \theta) + 4$ $6 - 6\sin^2 \theta = \sin \theta + 4 \Rightarrow 6\sin^2 \theta + \sin \theta - 2 = 0$	<b>M1</b>  <b>A1</b>  <b>[2]</b>	<b>3.1a</b>  <b>2.1</b>	Correct use of both $\cos^2 \theta = 1 - \sin^2 \theta$ and $\tan \theta = \frac{\sin \theta}{\cos \theta}$  <b>AG</b>  Must show sufficient working to justify the given answer
<b>6</b>	<b>(b)</b>		<b>DR</b> $(2\sin \theta - 1)(3\sin \theta + 2)$  Critical values occur when $\sin \theta = \frac{1}{2}$ and $\sin \theta = -\frac{2}{3}$ Critical values are $\theta = 30, 150, 222, 318$  $0 < \theta < 30$ or $150 < \theta < 222$ or $318 < \theta < 360$	<b>M1</b>  <b>B1</b>  <b>B1</b>  <b>B1</b>  <b>A1</b>  <b>[5]</b>	<b>1.1a</b>  <b>1.1</b>  <b>1.1</b>  <b>1.1</b>  <b>2.5</b>	Attempt to solve 3-term quadratic  Ignore incorrect use of inequalities for first three marks  Any three correct critical values 221.8103... 318.1896... Condone $\leq$ oe  B1 for one correct interval – 3sf or better (condone use of $x$ ) Cao (all three intervals) – 3 sf or better  Allow $\theta < 30$ , $150 < \theta < 222$ , $318 < \theta$  For those that have $\sin \theta = -\frac{1}{2}$ and $\sin \theta = \frac{2}{3}$ can score M1 (if <b>DR</b> seen) then <b>SC B1</b> for one ‘correct’ interval (condone $\leq$ oe) or <b>SC B2</b> for all three ‘correct’ intervals which are $\theta < 42, 138 < \theta < 210, \theta > 330$ (so max. 3/5)