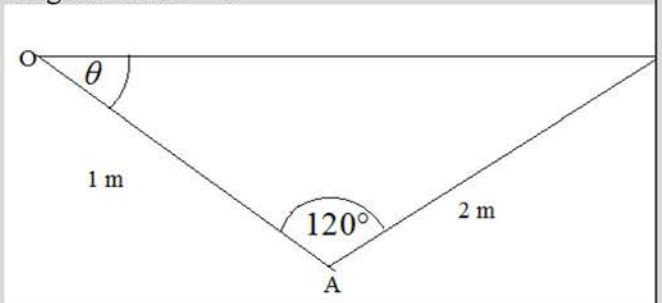
Question			Answer	Marks	AOs	Guidance	
8	(a)		BAC = $360 - 120 - 90 - (90 - \theta)$ $= \theta + 60$	B1	3.1a		
			$\Rightarrow$ BC = $2\sin(\theta + 60)$	M1	1.1		
			CD = AE = $\sin\theta$ $\Rightarrow h$ = CD + BC	E1	2.1		
			= $\sin\theta + 2\sin(\theta + 60°)$			AG	
				[3]			

Question			Answer	Marks	AOs	Guidance	
8	(b)		$h = \sin\theta + 2\sin(\theta + 60°)$ $= \sin\theta + 2(\sin\theta\cos 60 + \cos\theta\sin 60)$ $= \sin\theta + \sin\theta + \sqrt{3}\cos\theta$ $= 2\sin\theta + \sqrt{3}\cos\theta$	**M1**	**3.1a**	use of compound angle formula	
				A1	**2.1**		
			$h = 0 \Rightarrow \quad 2\sin\theta + \sqrt{3}\cos\theta = 0$	**M1**	**1.1**	$h = 0$ soi	
			$\Rightarrow \quad \tan\theta = -\frac{\sqrt{3}}{2}$	**M1**	**1.1**	Use of $\frac{\sin}{\cos} = \tan$	
			$\Rightarrow \quad \theta = -40.9°$[so 40.9° below the horizontal]	**A1**	**1.1**	or 319.1° or 139.1°	
			Alternative method Diagram with $h = 0$  	**M1**	3.1a		
			$a^2 = 1^2 + 2^2 - 4\cos 120°$	**M1**	2.1		
			$a = \sqrt{7}$	**A1**	1.1		
			$\sin\theta = \frac{2\sin 120°}{\sqrt{7}} = \sqrt{\frac{3}{7}}$	**M1**	1.1		
			$\theta = -40.9°$[so 40.9° below the horizontal]	**A1**	1.1	For final mark, θ shown below horizontal in diagram together with 40.9° is acceptable	
				[5]			