Question	Answer	Marks	Guidance
7(a)	$\sin AOQ = \frac{7}{10}$ $POA = \pi - AOQ$ or $14^2 = 10^2 + 10^2 - 200\cos AOB$ oe $POA = \frac{2\pi - AOB}{2}$	**M1**	Allow alternatives, but must be a complete method to find *POA*
	$POA = 2.366195157$ = 2.366 to 3 dp	**A1**	Must see an angle correct to more than 3dp used in order to justify 3 dp
7(b)	Area of sector = $\frac{1}{2}10^2(2.366)$ (118.3)	**B1**	Allow unsimplified. Also allow use of 2.37
	Area of triangle = $\frac{1}{2}10^2\sin 2.366$ (35)	**B1**	Allow unsimplified. Also allow use of 2.37
	Total area = awrt 153	**B1**	Allow greater accuracy
7(c)	Major arc *PB* = 10×2.366	**B1**	Allow unsimplified. Also allow use of 2.37
	$\sin\frac{POA}{2} = \frac{AP/2}{10}$ or $AP^2 = 10^2 + 10^2 - 200\cos POA$	**M1**	For a valid attempt to find *AP* – may be seen in **(a)** or **(b)** but *AP* must be stated in this part.
	$AP = 18.5$	**A1**	Allow awrt 18.5
	Perimeter: major arc *PB* + 20 + *their AP*	**B1**	For plan, may be implied, but must have an attempt to calculate *AP*
	Total perimeter = 62.2	**A1**	Allow awrt 62.2
8(a)	$2x^2 + 2x - 2 = x^2 + 6x - 2$ $x^2 - 4x = 0$ $x(x-4) = 0$ $x = 0,\ x = 4$	**M1**	For obtaining an equation in one variable
		M1	**Dep** for a correct attempt to obtain at least one solution
	$(0, -1)$	**A1**	nfww
	$(4, 19)$	**A1**	nfww
	Mid-point $(2, 9)$ with sufficient detail	**B1**	**AG**