Question	Scheme	Marks
6	$A=\frac{r^2}{2}\times\frac{\pi}{6}=\left(\frac{\pi r^2}{12}\right)$	B1
	$\frac{\mathrm{d}A}{\mathrm{d}r}=\frac{2\times\pi r}{12}=\left(\frac{\pi r}{6}\right)$	M1
	$\frac{\mathrm{d}A}{\mathrm{d}t}=\frac{\mathrm{d}A}{\mathrm{d}r}\times\frac{\mathrm{d}r}{\mathrm{d}t}$	M1
	Length of arc $AB=\frac{5\pi}{2}=r\frac{\pi}{6}\Rightarrow r=15$	M1
	$\frac{\mathrm{d}A}{\mathrm{d}t}=\frac{\pi\times15}{6}\times0.2=\frac{\pi}{2}\ \left(\mathrm{cm}^2/\mathrm{s}\right)$	M1A1 [6]
		Total 6 marks

Question	Notes	Marks
6	For using the correct formula for the area of the sector $A=\frac{r^2}{2}\times\frac{\pi}{6}=\left(\frac{\pi r^2}{12}\right)$	B1
	For an attempt to differentiate their expression for the area provided it is in the form $A=kr^2$ where $k\neq1$ (see general guidance) $\frac{\mathrm{d}A}{\mathrm{d}r}=\frac{2\times\pi r}{12}=\left(\frac{\pi r}{6}\right)$	M1
	For a correct statement of chain rule to achieve $\frac{\mathrm{d}A}{\mathrm{d}t}$ $\frac{\mathrm{d}A}{\mathrm{d}t}=\frac{\mathrm{d}A}{\mathrm{d}r}\times\frac{\mathrm{d}r}{\mathrm{d}t}$ may be seen stated or implied by substitution.	M1
	For using the length of arc when the length of arc is $\frac{5\pi}{2}$ $\frac{5\pi}{2}=r\frac{\pi}{6}\Rightarrow\left(r=15\right)$	M1
	For attempting to find the rate of change of area using a correct chain rule, their $\frac{\mathrm{d}A}{\mathrm{d}r}$, the given $\frac{\mathrm{d}r}{\mathrm{d}t}$ and their value for r $\frac{\mathrm{d}A}{\mathrm{d}t}=\frac{'\pi'}{6}\times'15'\times0.2=\ldots$	M1
	For the correct value of $\frac{\mathrm{d}A}{\mathrm{d}t}=\frac{\pi}{2}\ \left(\mathrm{cm}^2/\mathrm{s}\right)$	A1 [6]
		Total 6 marks