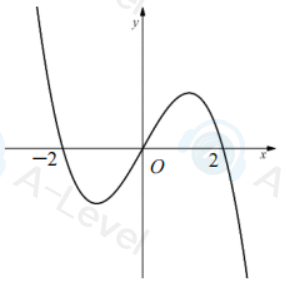
Question	Scheme	Marks
7(a)	$0=10-2x \Rightarrow x=5$ or $y=2, y=10-2x \Rightarrow x=4$	B1
	Examples: $\frac{1}{2}\times 2\left(5+4-a\right)=\frac{27}{4}$ or $\frac{1}{2}\times 2\left(5+4-\frac{2}{k}\right)=\frac{27}{4}$ Trapezium or $\frac{1}{2}\times 2a+\frac{1}{2}\times 2\left(5-a+4-a\right)=\frac{27}{4}$ or $\frac{1}{2}\times 2\times\frac{2}{k}+\frac{1}{2}\times 2\left(5-\frac{2}{k}+4-\frac{2}{k}\right)=\frac{27}{4}$ Triangle + Trapezium or $\frac{1}{2}\times 2a+2\left(4-a\right)+\frac{1}{2}\times 1\times 2=\frac{27}{4}$ or $\frac{1}{2}\times 2\times\frac{2}{k}+2\left(4-\frac{2}{k}\right)+\frac{1}{2}\times 1\times 2=\frac{27}{4}$ Triangle + Rectangle + Triangle or $\frac{1}{2}\times 5\times 2+\frac{1}{2}\left(4-a\right)\times 2=\frac{27}{4}$ or $\frac{1}{2}\times 5\times 2+\frac{1}{2}\left(4-\frac{2}{k}\right)\times 2=\frac{27}{4}$ 2 Triangles	M1
	$\Rightarrow k=\frac{8}{9}, a=\frac{9}{4}$	A1 A1ft
		(4)
(b)	Two of $y\geqslant "\frac{8}{9}"x,\ y\leqslant 10-2x, x>"\frac{9}{4}"$	M1
	All three of $y\geqslant \frac{8}{9}x,\ y\leqslant 10-2x, x>\frac{9}{4}$	A1
		(2)
		(6 marks)

Question Number	Scheme	Marks
5 (a)	Attempts $r\theta=5\times 1.2$ Perimeter $=5+5+6=16$ (km)	M1 A1 (2)
(b)	Attempts $\frac{1}{2}r^2\theta=\frac{1}{2}\times 5^2\times 1.2$	M1
	Area $AOP=\frac{1}{4}\times\left(\frac{1}{2}\times 5^2\times 1.2\right)=3.75\text{ km}^2$ *	M1, A1*
		(3)
(c)	Sets $\frac{1}{2}\times 5\times OP\times\sin 1.2=3.75\Rightarrow OP=\ldots$	M1
	$OP=1.6\ldots$	A1
	$AP^2=5^2+"1.6.."^2-2\times 5\times "1.6.."\times\cos 1.2$	M1
	$AP=4.7\text{km}$ or 4700m	A1cso
		(4) (9 marks)

Question	Scheme	Marks
8(a)		B1B1B1
		(3)
(b)	$x\left(4-x^2\right)=\dfrac{A}{x}\Rightarrow 4x^2-x^4=A$ $\Rightarrow x^4-4x^2+A=0*$	B1*
		(1)
(c)	$A>0$	B1
	$b^2=4ac\Rightarrow 16=4A\Rightarrow A=...$	M1
	$0<A<4$	A1
		(3)
		Total 7

Question Number	Scheme	Marks
4 (a)	States or implies that $\left[\mathrm{f}(x)=\right]kx(x-4)$	M1
	Attempts to find k. E.g. $-4.8=k\times 2\times(2-4)\Rightarrow k=...$	dM1
	$\left[\mathrm{f}(x)=\right]1.2x(x-4)$	A1
		(3)
(b)	States or implies that $\left[\mathrm{g}(x)=\right]\lambda x(x-4)^2$	M1
	Attempts to find λ . E.g. $7.2=\lambda\times 6\times(6-4)^2\Rightarrow\lambda=...$	dM1
	$\left[\mathrm{g}(x)=\right]0.3x(x-4)^2$	A1
		(3)
(c)	Sets their $1.2x(x-4)=0.3x(x-4)^2$	B1ft
	Valid attempt to solve $1.2\cancel{x}\cancel{(x-4)}=0.3\cancel{x}(x-4)^{\cancel{2}}\Rightarrow x=4+\dfrac{1.2}{0.3}$	M1
	$x=8$	A1
	$\left(8,38.4\right)$	A1
		(4) **(10 marks)**