

Q	Marking instructions	AO	Marks	Typical solution
6(a)	Finds correct midpoint of $AB$	1.1b	B1	(4,1)
<b>Subtotal</b>			<b>1</b>	

Q	Marking instructions	AO	Marks	Typical solution
6(b)	Calculates length of radius, $AC$ , $BC$ or half $AB$ using 'their' centre.	3.1a	M1	$r = \sqrt{(4-1)^2 + (1-4)^2}$ $= \sqrt{18}$ $(x-4)^2 + (y-1)^2 = 18$ $x^2 - 8x + 16 + y^2 - 2y + 1 = 18$ $x^2 + y^2 - 8x - 2y = 1$
	Obtains correct value for the radius or square of the radius.	1.1b	A1	
	Derives circle equation in any form using their centre and radius. Condone sign error in brackets. Or Completes the square on given equation to obtain centre and radius. Condone sign error in brackets.	1.1a	M1	
	Completes reasoned argument to obtain equation in given form Or Justifies that the centre and radius obtained from completing the square on the given equation corresponds to the midpoint from part (a) and the radius from part (b) AG	2.1	R1	
<b>Subtotal</b>			<b>4</b>	

Q	Marking instructions	AO	Marks	Typical solution
6(c)	Substitutes $y = 0$ into the given formula and solves the quadratic equation.  Or  Uses Pythagoras on the triangle CDM where $M(4, 0)$ to find DM or EM	3.1a	M1	$x^2 - 8x - 1 = 0$ $x = 4 + \sqrt{17} \text{ and } 4 - \sqrt{17}$ $DE = 2\sqrt{17}$ $\text{Area} = \frac{1}{2} \times 1 \times 2\sqrt{17}$ $= \sqrt{17}$
	Obtains 2 correct values for $x$ Condones decimal equivalents AWRT 8.1 and $-0.1$  Or  Obtains DM or EM = $\sqrt{17}$	1.1b	A1	
	Deduces length of DE as the difference between their two values of $x$  Or  Deduces the length of DE as twice the length of DM or EM PI	2.2a	M1	
	Obtains $\sqrt{17}$ CAO	1.1b	A1	
	<b>Subtotal</b>		<b>4</b>	

	<b>Question 6 Total</b>		<b>9</b>	
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