

Question			Answer	Marks	AO	Guidance
4	(a)		$AB = \sqrt{2^2 + 4^2} = \sqrt{20} = 2\sqrt{5}$	B1 [1]	1.1	Correct length aef Condone 4.47 or better Allow isw eg $\sqrt{20} = 4\sqrt{5}$ Allow BOD on signs eg $AB = -2\mathbf{i} - 4\mathbf{j}$ seen
4	(b)		$(p - 3)^2 + (p - 5)^2 = 20$ $p^2 - 8p + 7 = 0$ $p = 7$ C is $7\mathbf{i} + 7\mathbf{j}$	M1 A1 A1 [3]	1.1a 1.1 1.1	Attempt correct equation for length BC BC Solve correct quadratic to obtain at least $p = 7$ Correct position vector for C ; it could be given as column vector, but not coordinate Using their attempt at length of AB Condone error on RHS eg having $\sqrt{20}$ not 20 If second value of p stated then it must be correct No need to discard $p = 1$ If M0 , question is ‘determine’ so some evidence needed for full marks – either justifying lengths are equal, or use of components of 2 and 4 $7\mathbf{i} + 7\mathbf{j}$ with some explanation B3 $7\mathbf{i} + 7\mathbf{j}$ with no explanation B2 (7, 7) with some explanation B2 (7, 7) with no explanation B1

Question		Answer	Marks	AO	Guidance	
4	(c)	OM is $4\mathbf{i} + 4\mathbf{j}$ OR BM is $\mathbf{i} - \mathbf{j}$	B1	1.1	Correct midpoint soi Could instead find vector BM	Allow M seen as coordinate, as it is part of their method and not a requested answer Condone $M = 4\mathbf{i} + 4\mathbf{j}$, but penalise clear error eg $AM = 4\mathbf{i} + 4\mathbf{j}$ is B0 Could be soi on a diagram
		D is $6\mathbf{i} + 2\mathbf{j}$	B1	1.1	Correct position vector (not coordinate) for D	Do not penalise D given as coordinate if already penalised in part (b) Answer only is B0B1
			[2]			
4	(d)	Kite	B1*	2.2a	Mark independently of reason	All relevant evidence quoted must be correct Sides must be defined as adjacent, so B0 for just 'two pairs of equal sides', but allow BOD if clarified on an explicit diagram seen in part (d) If using a geometrical argument, then identify that ABC is isosceles, M is mid-point of AC hence perpendicular bisector
		eg two pairs of adjacent sides of same length eg diagonals are perpendicular eg BD being a line of symmetry	B1dep*	2.2a	Evidence is required to support statements made $AD = CD = \sqrt{26}$ (or compare components of vectors) ; condone not stating $AB = BC$ as given in question AC has gradient of 1, BD has gradient of -1 $AM = MC$, with perpendicular argument as above B0 for reasoning using angles (ie a pair of facing equal angles) unless justified.	
			[2]			