1.5 Further Vectors: 10-minute Pack

EDEXCEL 9FM0 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Two coastal survey markers used by Jamal's team are at A(2, -1, 3) and B(5, 4, -2), with coordinates in kilometres relative to a harbour office. Jamal models the straight path between them as the line l1 through A and B.

(a) Find the vector AB. **(2)**

(b) Write down a vector equation for l1. **(2)**

(c) A third marker C has coordinates (11, 14, -12). Show that C lies on l1. **(3)**

(Total for Question 1 is 7 marks)

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Mark scheme · 1.5 Further Vectors: 10-minute Pack

Question 1

(a) attempts B - A	**M1**
(a) AB = (3, 5, -5), cao	**A1**
(a) Answer: AB = (3, 5, -5)	
(b) uses point A (or B) as the position vector	**B1**
(b) r = (2, -1, 3) + t(3, 5, -5), oe (e.g. using B and/or a scalar multiple of AB)	**B1**
(b) Answer: r = (2, -1, 3) + t(3, 5, -5)	
(c) forms two equations from components, e.g. 2+3t=11 and -1+5t=14	**M1**
(c) solves to get t=3 from both equations	**A1**
(c) checks third component 3-5t = 3-15 = -12, consistent, so C lies on l1, cso	**A1**
(c) Answer: C lies on l1 (t = 3 is consistent for all three components)	

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