2.3 Matrices and Matrix Transformations: 10-minute Pack

EDEXCEL 4MA1 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Allow 10 minutes.

1 For a transformation exercise, calculate A - B where A = [[7, 2], [0, -3]] and B = [[4, -1], [5, 2]].

(Total for Question 1 is 1 mark)

2 Apply a linear transformation to a point. Calculate the image of point P with position vector p = [[3], [2]] under the 2x2 matrix T = [[2, 0], [1, -1]].

(Total for Question 2 is 2 marks)

3 Two transformations are combined: first reflect in the y-axis, then translate by vector t = [[3], [1]]. Describe fully the single transformation that maps an arbitrary point (x,y) to its final image. Give the type of transformation, and if it is not a pure single linear transformation explain it as 'reflection then translation' and give the net effect on coordinates.

(Total for Question 3 is 5 marks)

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Mark scheme · 2.3 Matrices and Matrix Transformations: 10-minute Pack

Question 1

A - B = [[3, 3], [-5, -5]] cao	**B1**

Answer: [[3, 3], [-5, -5]]

Question 2

performs matrix multiplication T p	**M1**
T p = [[6], [1]] cao	**A1**

Answer: [[6], [1]]

Question 3

describes reflection in y-axis as mapping (x,y) to (-x,y)	**M1**
applies translation to give (-x + 3, y + 1)	**M1**
states that the combined map is not a single linear transformation but an isometry composed of reflection then translation	**M1**
gives final coordinate rule correctly as (x,y) -> (3 - x, y + 1)	**M1**
full clear description that the mapping is: reflect in the y-axis, then translate by vector (3,1), equivalently (x,y) maps to (3 - x, y + 1)	**A1**

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