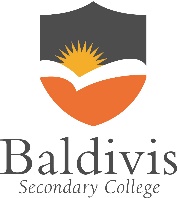
Name. 

Mathematics Specialist Unit Test 6

Matrices and Complex Numbers

Mark:\_\_\_\_\_/54

1 A4 page of notes (one sided)

Section 1: Non-Calculator

Time Allocation: 20 mins Marks: \_\_\_\_/19

1 [6 marks: 2, 2, 2]

Determine the transformation matrix representing each of the following:

1. reflection about the y axis
2. dilation parallel to the x axis scale factor 4
3. reflection about the line y = x tan(300)

2. [3 marks]

Solve the following equation, leaving any non-real solutions in the form a + bi



1

3. [4 marks]

Express the following as a product of two linear factors:

4. [6 marks1,1,2,2]

The transformation T is represented by the matrix .

1. Describe in words the transformation T.
2. The transformation is applied to the line with the equation y=x.

Find the equation of the resulting line

1. The point A is mapped to the point with the coordinates (k, k+1) under transformation T. find the coordinates of point A. Justify your answer.
2. The transformation T is combined with the transformation represented by the matrix **M**. All the entries in **M** are positive. The effects of the combined

transformation is represented by the matrix .

Find the matrix **M**. show clearly your reasoning.

# END OF SECTION 1