**COMP1003 Maths Worksheet**

In the following questions, I will write vectors as either 1x2 or 2x1 matrices as is convenient. Throughout these exercises A is the matrix given below:

1 2

3 1

**1.** If v = [0,0], what is the value of Av?

**2.** If v = [3,6], what is the value of Av?

**3.** What is the determinant of A?

**4.** What is the inverse of A?

**5.** What geometrical transformation is represented by the matrix below?

k 0

0 k

**6.** If B is the matrix shown in Q5, what is BA?

**7.** What geometrical transformation is represented by the matrix below?

1/√2 -1/√2

1/√2 1/√2

**8.** By considering your answers to Q5-7, identify/describe the “compound” geometrical transformation that is represented by the matrix below

1 -1

1 1

**9.** Compute the eigenvectors and eigenvalues of the matrix

2 2

1 3