Matrices acting on position vectors

Name: _____ Date: _____

6 questions | 12 marks

1. Find the image of $(2, -1)$ under $\begin{pmatrix} 1 & 3 \\ 2 & 0 \end{pmatrix}$. [2 marks]

2. Write the matrix sending e_1 to $(2, 0)$ and e_2 to $(0, -1)$. [2 marks]

3. Apply $\begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix}$ to $(3, 2)$. [2 marks]

4. Apply $\begin{pmatrix} 2 & 1 \\ 0 & 1 \end{pmatrix}$ to the vertices $(0, 0), (1, 0), (0, 2)$. [2 marks]

5. Find the matrix for $(x, y) \mapsto (x - 2y, 3x + y)$. [2 marks]

6. A map sends e_1 to (a, b) and e_2 to (c, d). Find the image of $(3, -2)$. [2 marks]