

**MthSc 208: Differential Equations (Fall 2011)**  
**In-class Worksheet 4a: Basic linear algebra**

**NAME:**

Let  $\mathbf{A} = \begin{pmatrix} -2 & 1 \\ 4 & 1 \end{pmatrix}$ .

1. Compute  $\det \mathbf{A}$ .

2. Compute  $\mathbf{A}^{-1}$ .

3. Solve the system of equations  $\begin{cases} -2x_1 + x_2 = 12 \\ 4x_1 + x_2 = 18 \end{cases}$

4. Compute the eigenvalues of  $\mathbf{A} = \begin{pmatrix} -2 & 1 \\ 4 & 1 \end{pmatrix}$ .

5. Compute the corresponding eigenvectors of  $\mathbf{A}$ .