Practice Exam 2 - MATH 1502

Indicate your name and section. The exam will be closed book, closed notes and no calculators will be allowed. Show all your work.

**Problem 1 (points):** Compute the eigenvalues and eigenvectors of

\[ A = \begin{bmatrix} 2 & 0 \\ 1 & 2 \end{bmatrix} \]

**Problem 2 (points):** Compute the eigenvalues and eigenvectors of

\[ A = \begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix} \]

**Problem 3 (points):** Compute the eigenvalues and eigenvectors of

\[ A = \begin{bmatrix} 0 & -1 \\ 2 & 2 \end{bmatrix} \]

**Problem 4 (points):** Find the parametric equation of the line that goes through the point \((1, -2, 0)\) in the direction of the vector \(\begin{bmatrix} -1 \\ 1 \\ -2 \end{bmatrix}\).

**Problem 5 (points):** Find the parametric equation of the line that goes through the points \((1, 2, 0)\) and \((1, 1, 3)\).
Problem 6 (points): Find the equation in standard form of the line that goes through the points (1,0) and (2,−3).

Problem 7 (points): Find the equation of the plane that contains the points (1,2,−1) and is perpendicular to the vector \[
\begin{pmatrix}
-1 \\
1 \\
-2
\end{pmatrix}
\].