Name: _____

Directions: Show all work. No credit for answers without work.

1. [**4 points**] Find all eigenvalue/eigenvector pairs for $\begin{bmatrix} -4 & -3 & -6 \\ 18 & 11 & 12 \\ 0 & 0 & -1 \end{bmatrix}$.

(a) [**4 points**] Find the general solution to $\mathbf{x}' = \begin{bmatrix} -2 & 20 \\ -1 & 7 \end{bmatrix} \mathbf{x}$.

(b) [**2 points**] Solve the system in (a) with initial condition $\mathbf{x}(0) = \begin{bmatrix} 1 \\ 2 \end{bmatrix}$.