MTH 267, Quiz #9, Fall 2018 Name _____

Instructions: Show all work. Use exact answers unless otherwise asked to round.

1. Solve the system $\vec{x}' = \begin{pmatrix} 3 & 2 \\ 1 & 2 \end{pmatrix} \vec{x}$ for the general solution.

2. A force of 50 N stretches a spring 0.8 meters. A dashpot device is attached that applies a force of 3 N for each unit of velocity. A mass of 10 kg is attached to the end of the spring and is initially released from equilibrium position with a downward velocity of 0.1 m/s. Write the second-order equation that models the system. Then convert it to a system of first-order equations.