Quiz 11; Tuesday, November 22
MATH 54 with Ming Gu
GSI: Eric Hallman

Student name:

You have 15 minutes to complete the quiz. Calculators are not permitted.

Consider the system $\mathbf{x}'(t) = \mathbf{A}\mathbf{x}(t), t \geq 0$, with $\mathbf{A} = \begin{bmatrix} 1 & \sqrt{3} \\ \sqrt{3} & -1 \end{bmatrix}$.

1. (6 points) Find the eigenvalues and eigenvectors of the matrix $\mathbf{A}$.

2. (3 points) Find the general solution to the system $\mathbf{x}'(t) = \mathbf{A}\mathbf{x}(t)$.

3. (3 points) Sketch the trajectory of the solution having initial vector $\mathbf{x}(0) = \begin{bmatrix} 0 \\ 1 \end{bmatrix}$.