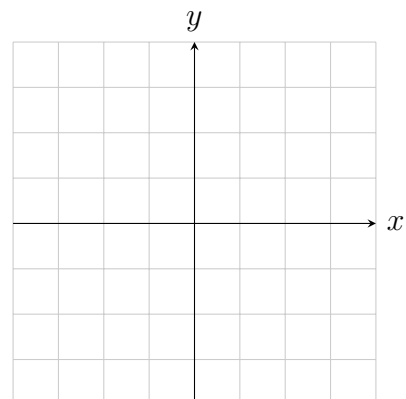


Name: _____

1. Given the system of differential equations $\begin{pmatrix} x'(t) \\ y'(t) \end{pmatrix} = \begin{pmatrix} 4 & 2 \\ -3 & -1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$, compute the eigenvalues and eigenvectors, sketch the direction field and straight-line solutions, and state the general solution to system. For each eigenvalue specify a corresponding straight-line solution. Find the particular solution with initial condition $(x(0), y(0)) = (11, -16)$.



2. Given the system of differential equations $\begin{pmatrix} x'(t) \\ y'(t) \end{pmatrix} = \begin{pmatrix} 3 & -1 \\ 5 & -3 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$, compute the eigenvalues and eigenvectors, sketch the direction field and straight-line solutions, and state the general solution to system. For each eigenvalue specify a corresponding straight-line solution. Find the particular solution with initial condition $(x(0), y(0)) = (-4, -8)$.

