Gradescope Assignment: Due 3/5/21
0 pts for no work
2 pts for attempt
4 pts for full answer

1. (Short) Find the general solution to

$$\frac{d\mathbf{x}}{dt} = \begin{pmatrix} 3 & 1 \\ 1 & 3 \end{pmatrix} \mathbf{x}$$

   Draw a sketch of the phase plane. Describe the type of behavior (sink, saddle, source). Clearly label in your diagram the directions corresponding to the eigenvectors.

2. (Short) Find the general solution to

$$\frac{d\mathbf{x}}{dt} = \begin{pmatrix} -12 & 5 \\ 5 & 12 \end{pmatrix} \mathbf{x}$$

   Draw a sketch of the phase plane. Describe the type of behavior (sink, saddle, source). Clearly label in your diagram the directions corresponding to the eigenvectors.