3. [14 points] Consider the systems of equations below. In each the vector **x** has components x_1 and x_2.

A. $\mathbf{x}' = \begin{pmatrix} 2 & -8 \\ 3 & -8 \end{pmatrix} \mathbf{x}$

B. $\mathbf{x}' = \begin{pmatrix} 2 & -8 \\ 3 & -8 \end{pmatrix} \mathbf{x} + \begin{pmatrix} 2 \\ -1 \end{pmatrix}$

Match each of these to one of the graphs to the right (note that two of these are component plots and two are phase portraits). Briefly explain how you know that your matching is correct.

I.

II.

III.

IV.