

Suggested problems 28

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1. Determine the type and stability of the critical point at $(0, 0)$ of each system below.

(a) $\bar{x}' = \begin{pmatrix} 2 & 7 \\ -5 & -10 \end{pmatrix} \bar{x}$

(b) $\bar{x}' = \begin{pmatrix} -3 & 6 \\ -3 & 3 \end{pmatrix} \bar{x}$

(c) $\bar{x}' = \begin{pmatrix} 3 & 0 \\ 0 & 3 \end{pmatrix} \bar{x}$

2. $\bar{x}' = \begin{pmatrix} 5 & b \\ 2 & -1 \end{pmatrix} \bar{x}$

(a) For what value(s) of b will the system below have an improper node at $(0, 0)$?

(b) For what value(s) of b will the system below have a spiral point at $(0, 0)$?