For $(-1, 0)$, the eigenvalues of

$$J = \begin{bmatrix} -1 & -2 \\ 0 & 2 \end{bmatrix}$$

are -1 and 2. Since one is negative and the other is positive, we have that $(-1, 0)$ is a saddle point.

For $(0, 0)$, $J = I$ so the eigenvalues are 1 and 1 so $n = 2 \geq 1 \Rightarrow (0, 0)$ is an unstable node from Table 9.1.1.