

Extra credit homework, due Wednesday December 1st:

Study the dynamics of the following planar system, which models the Belousov-Zhabotinsky (BZ) reaction:

$$\begin{aligned}x' &= a - x - 4xy/(1 + x^2) \\y' &= bx(1 - y/(1 + x^2))\end{aligned}$$

You can restrict your analysis to $x \geq 0$, $y \geq 0$, $a \geq 0$, and $b \geq 0$.

Try to employ the Poincare-Bendixson theorem in your analysis; it may only be possible to do so in a certain range of parameters.