Consider the same system as in the previous homework, i.e.

$$x' = x(2 - x - y) \tag{1}$$
$$y' = y(x - 1) \tag{2}$$

For all the equilibria, i.e. $(0,0)$, $(2,0)$ and $(1,1)$:

i) Find the linearization matrix and compute its spectrum.

ii) What can you conclude about the stability of the equilibria?

iii) If possible, apply the stable/unstable direction theorem and outline a better picture of the dynamics close the equlibria.