

# OK to post

\* Julian Herman, 10/11/21, Assignment 11

4.) ii) By definition of equilibrium, in the long run, all the values are the same:

$$\text{Let } x_n = x_{n-1} = x_{n-2} = z$$

$$z = \frac{z + a \cdot z}{bz + z}$$

$$bz^2 + z^2 = z + az$$

$$z^2(1+b) = z(1+a)$$

assuming  $z \neq 0$ :

if  $z=0$ , you get division by 0.

$$z(1+b) = (1+a)$$

$$z = \frac{1+a}{1+b}$$

\* Equilibrium point =  $\frac{1+a}{1+b}$