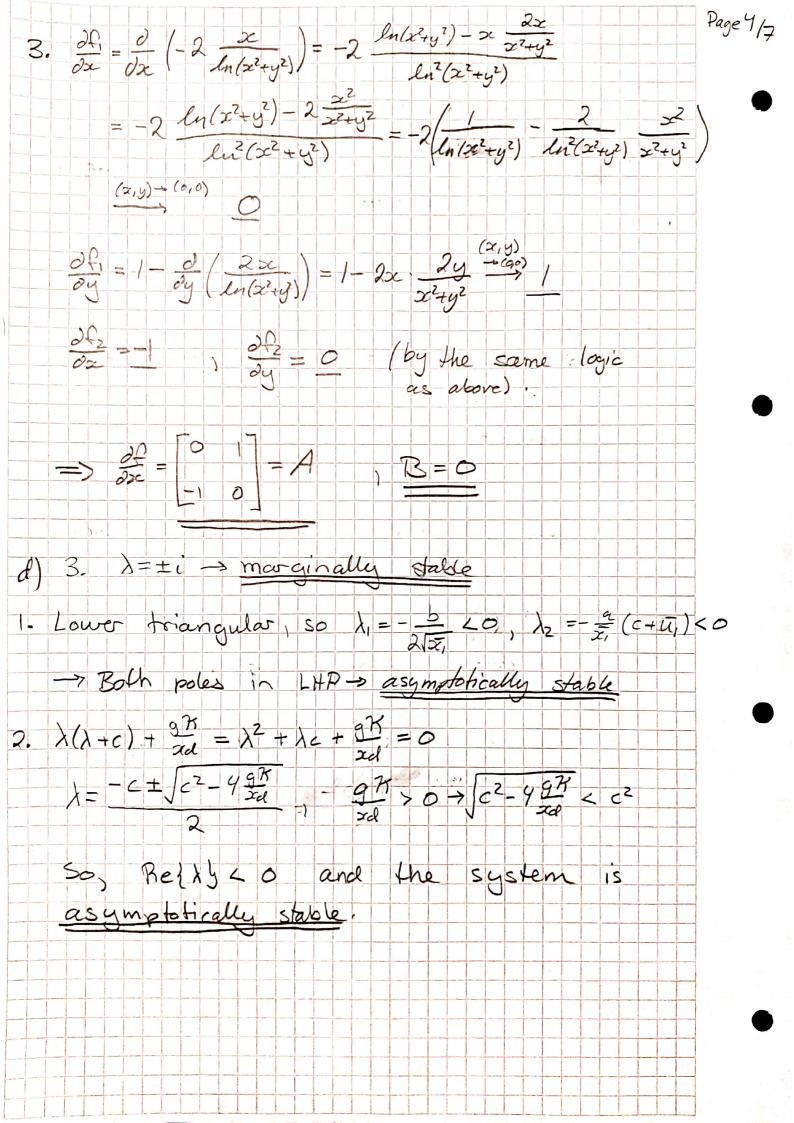
Page 1/7 TTK4130 Assignment 1 Eirik Falck 2=02-1324 2: prey y: predators 14=-14+8=4 Problem 1 1. se, = au, - box, 4i>0 i=1,2,3 == = (u, (u, -×2) + c(u3-22)) a,5, c>0 2. $\frac{1}{2} + \frac{1}{2} + \frac$ $\frac{1}{2c} = \frac{1}{2} \frac$ $y = \frac{y}{\ln \sqrt{3e^2 + y^2}} \left[x, y \right] \neq \left[g, o \right]$ $[\alpha,y] = [0,0]$ a) 1. Already in state-space form
3. Already in state-space form 2. $x_1 = x_2$ $x_2 = x_1 = x_2$

b) 1.
$$u = [u, u_2 \ u_3]^T = cons.$$
; $z = [\bar{x}, \bar{x}_2]^T$
 $0 = au, -b\sqrt{x_1} \rightarrow J\bar{x}_1 = \frac{a}{6}u_1 - \bar{x}_1 = (\frac{a}{6})^2 \bar{x}_1^2$
 $0 = \frac{2}{2}(u_1u_2 - u_1\bar{x}_2 + c\bar{u}_3 - c\bar{x}_2)$
 $= u_1u_2 + (c + \bar{u}_1)\bar{x}_2 + c\bar{u}_3$
 $\Rightarrow u_1u_2 + c\bar{u}_3$

2. Equibrium when $u = u = u = 0$
 $0 + co + \beta(1 - (\frac{u}{2})^N) = 0$
 $(\frac{u_1}{2})^T = 1 \rightarrow \bar{x} = x\beta$

3. Equibrium when $[x, y] \neq [0, 0]$:

 $u = y^2 + u^2 = 0$
 $u = u^2 + u^2 = 0$



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