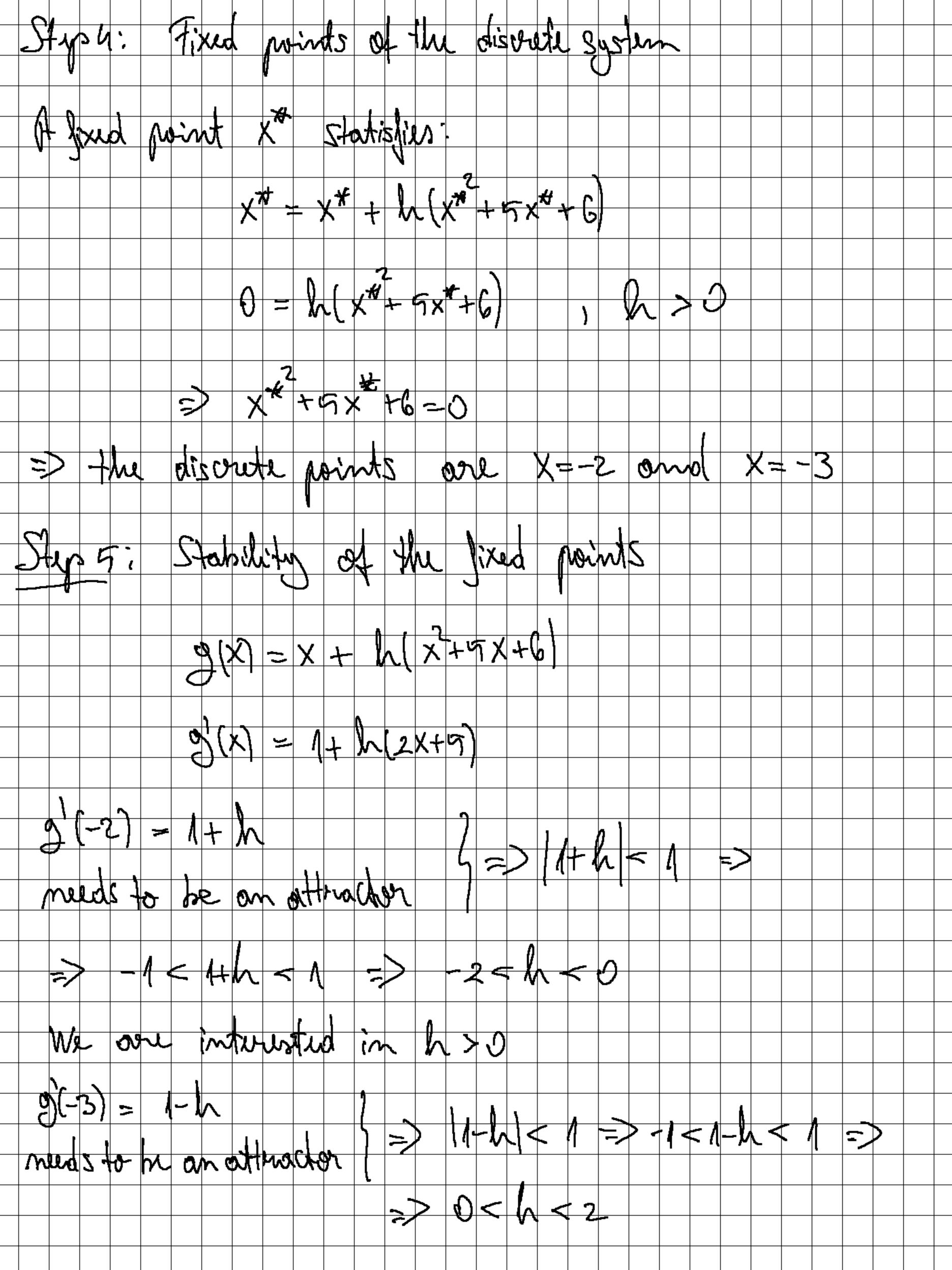
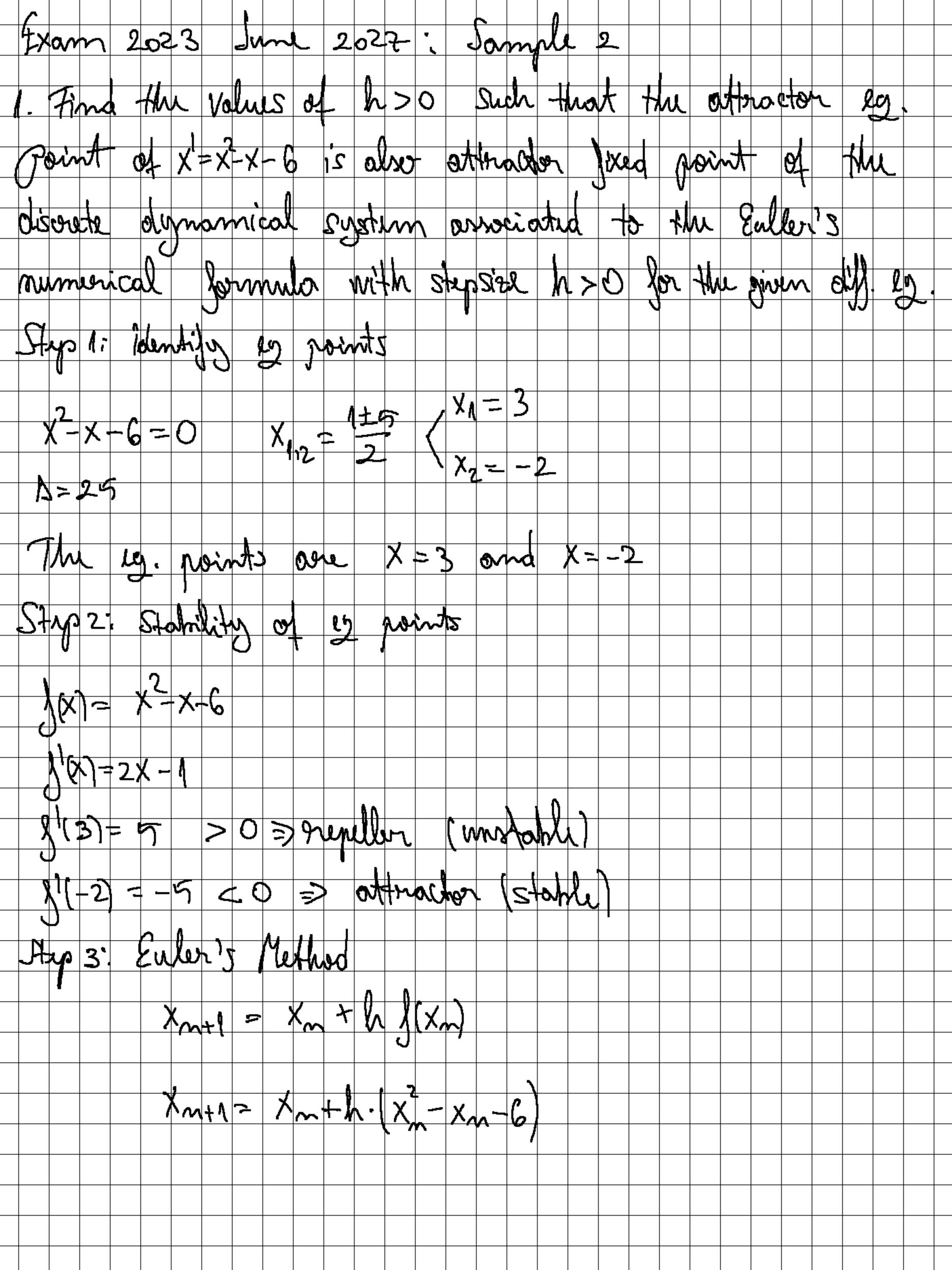
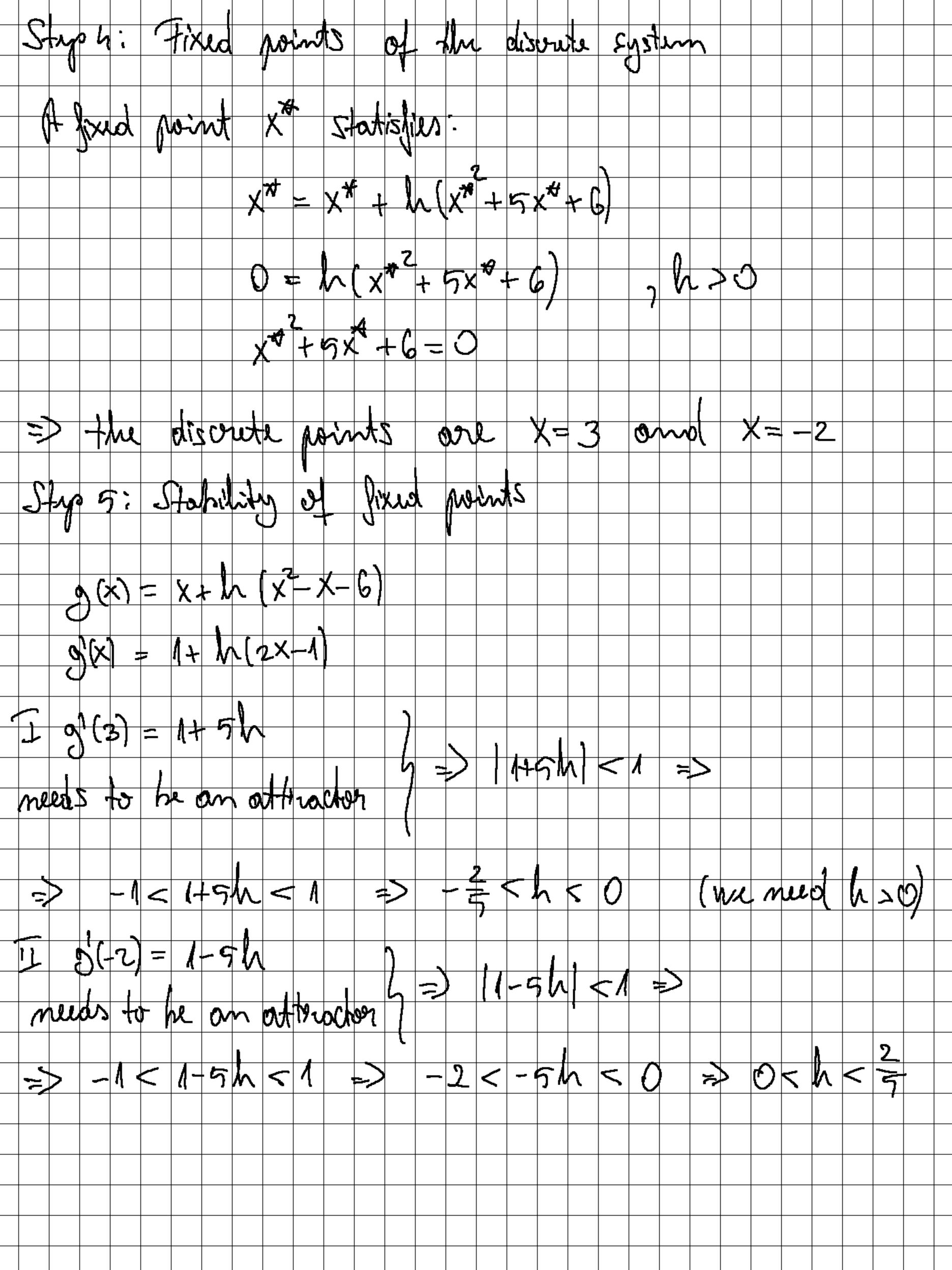
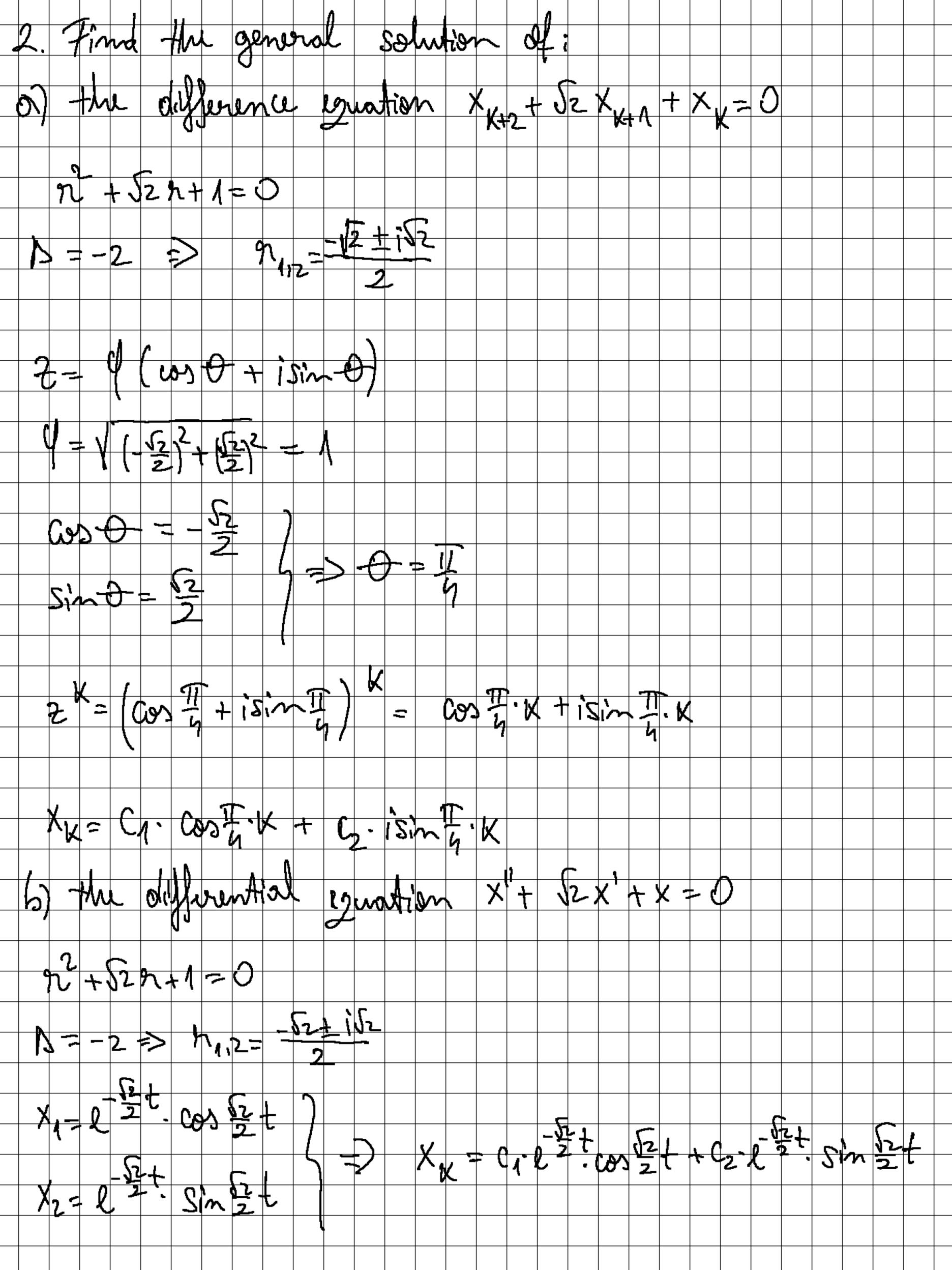


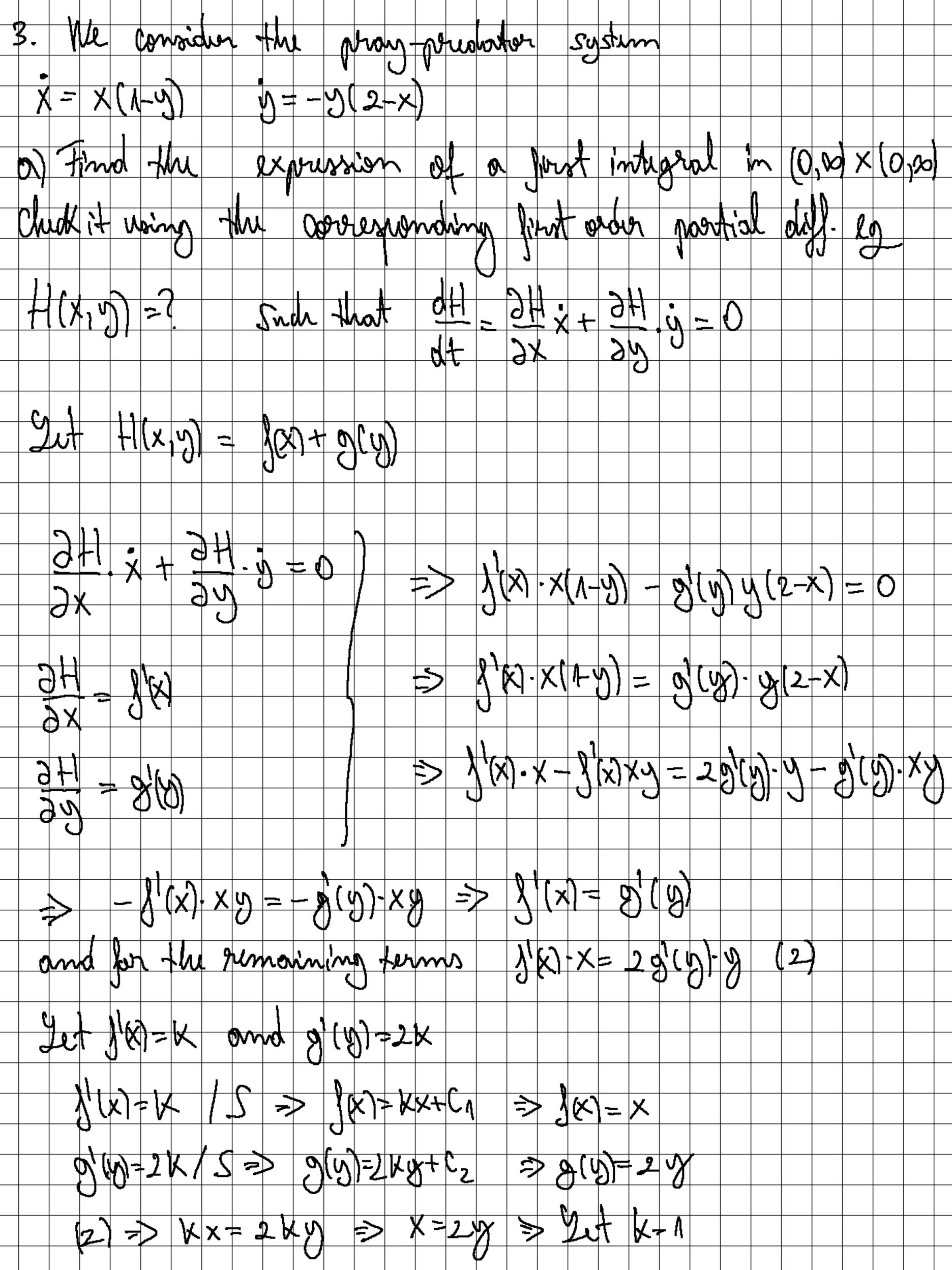
of ho such that the attractor Tind the Values also point of x' = x + 5x + 6 ż on extractor System lixed point of the discrete dynamical de the Euler's numerical formula with styrsize h > 0 the given outperential equation Strion of Champion : 1 Strion X17-2 X1,2 - 5± 1 X+6X+6= 15 25 2h = 2 throw Etwan. Cs. 40 philidate 1(X) = X2+6X+6 report bentium 2 multi- Ea solvin for

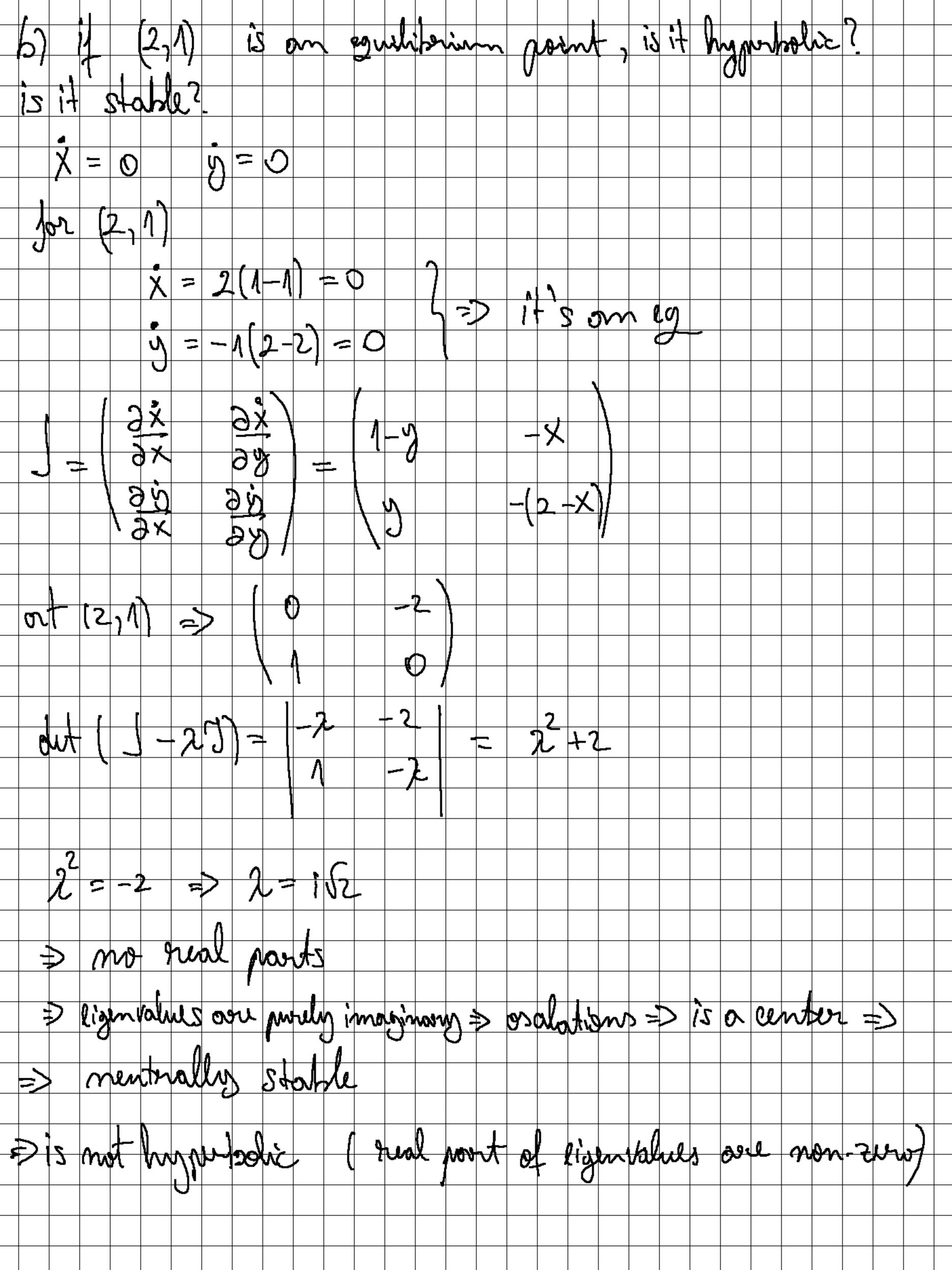






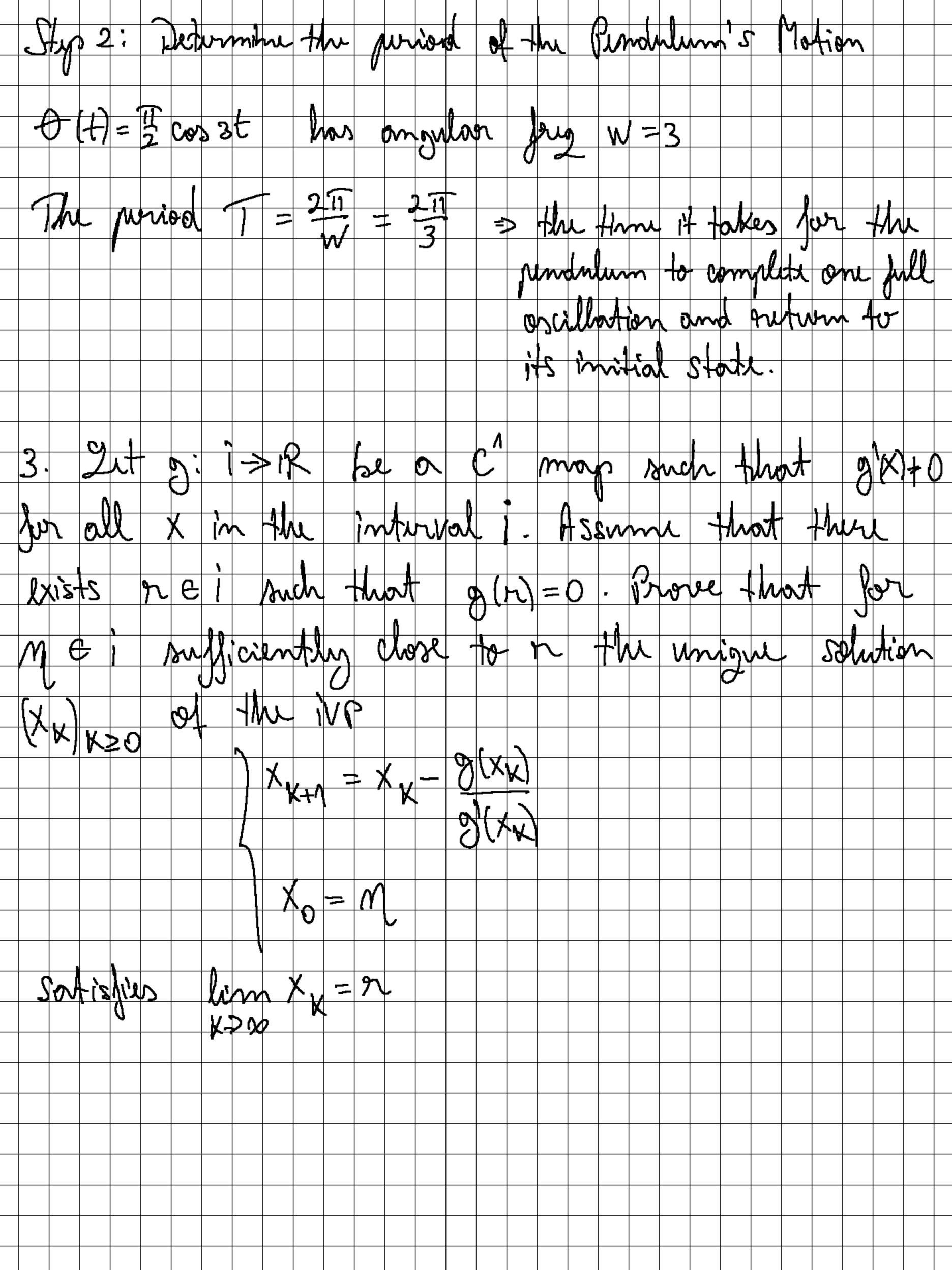


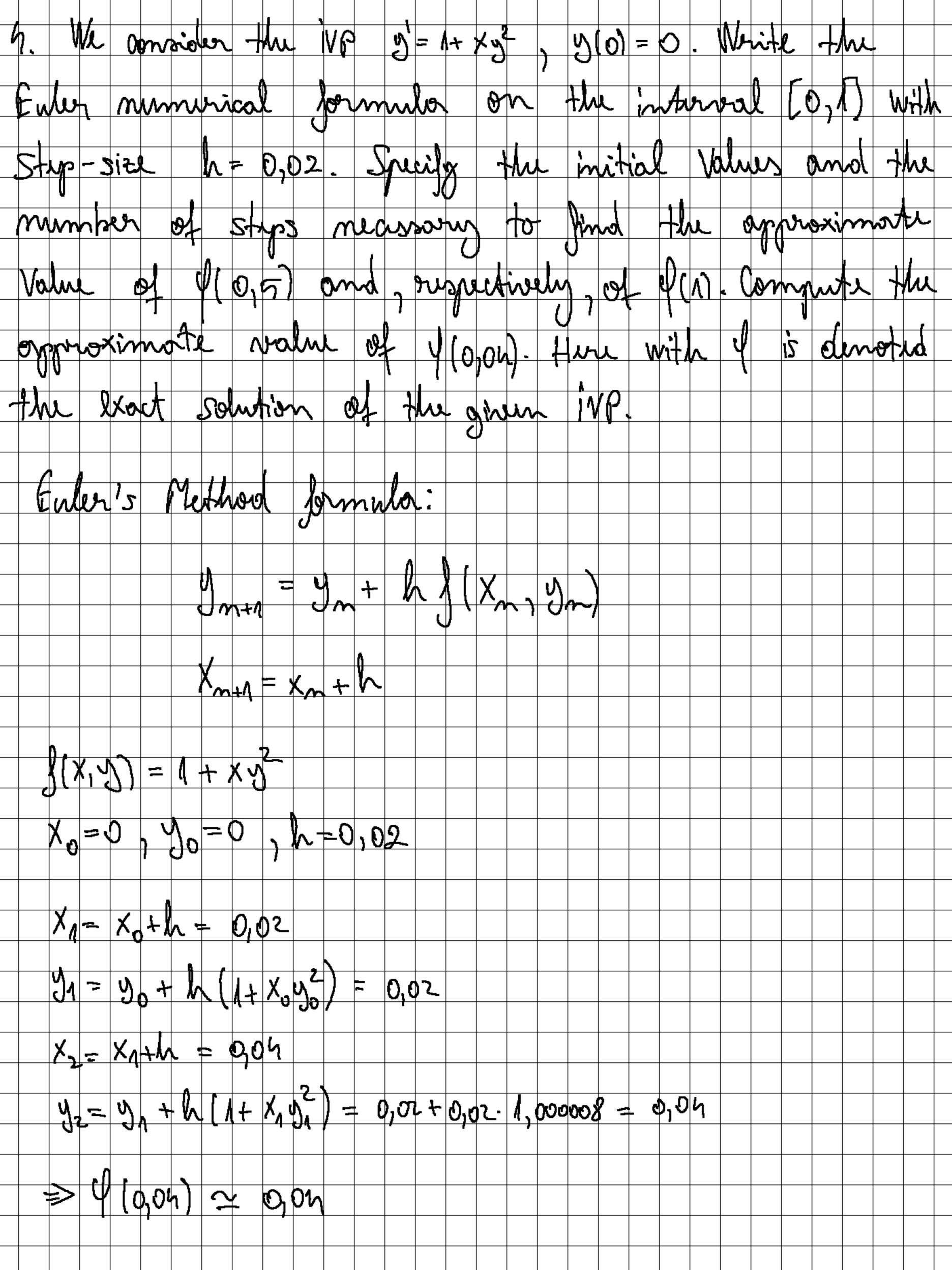




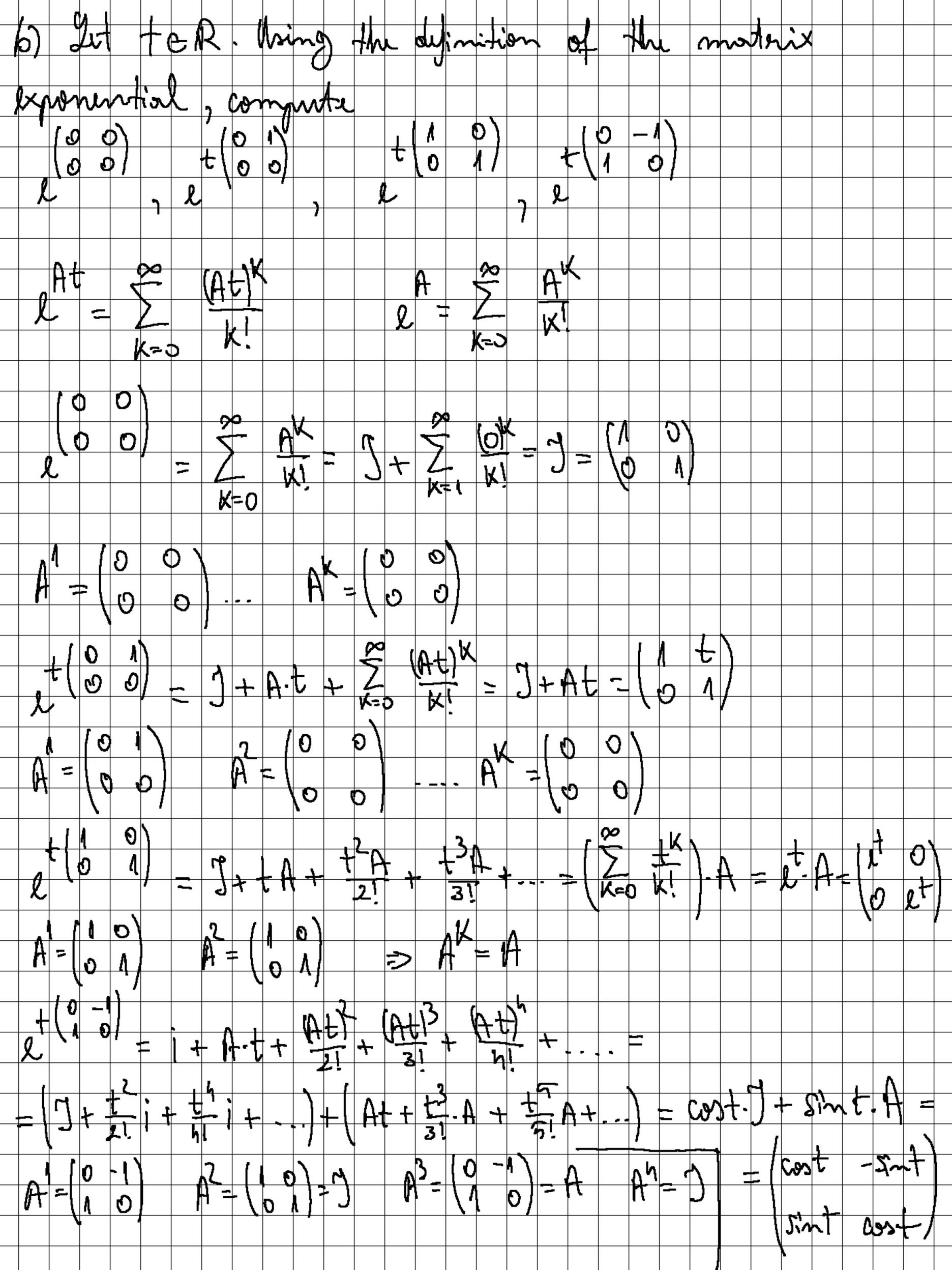
Exam 2023 June 28: 1- Tor each K>0 we consider the differential equation X = -k(x-21) which is the model of Newton Jon Cooling processes, how X(t) being the timporture of a cup of two of time t. The time is measured in minutes, and the femourature in celsius degrees. of time it's flow b) An experiment revealed the following fact: a cup of the with initial temperature of 49°C has offer 10 minutes 37°C. Fina the initial temperature of a copy of the such That after 20 minutes the tea has 37°C Solved in Seminon_n

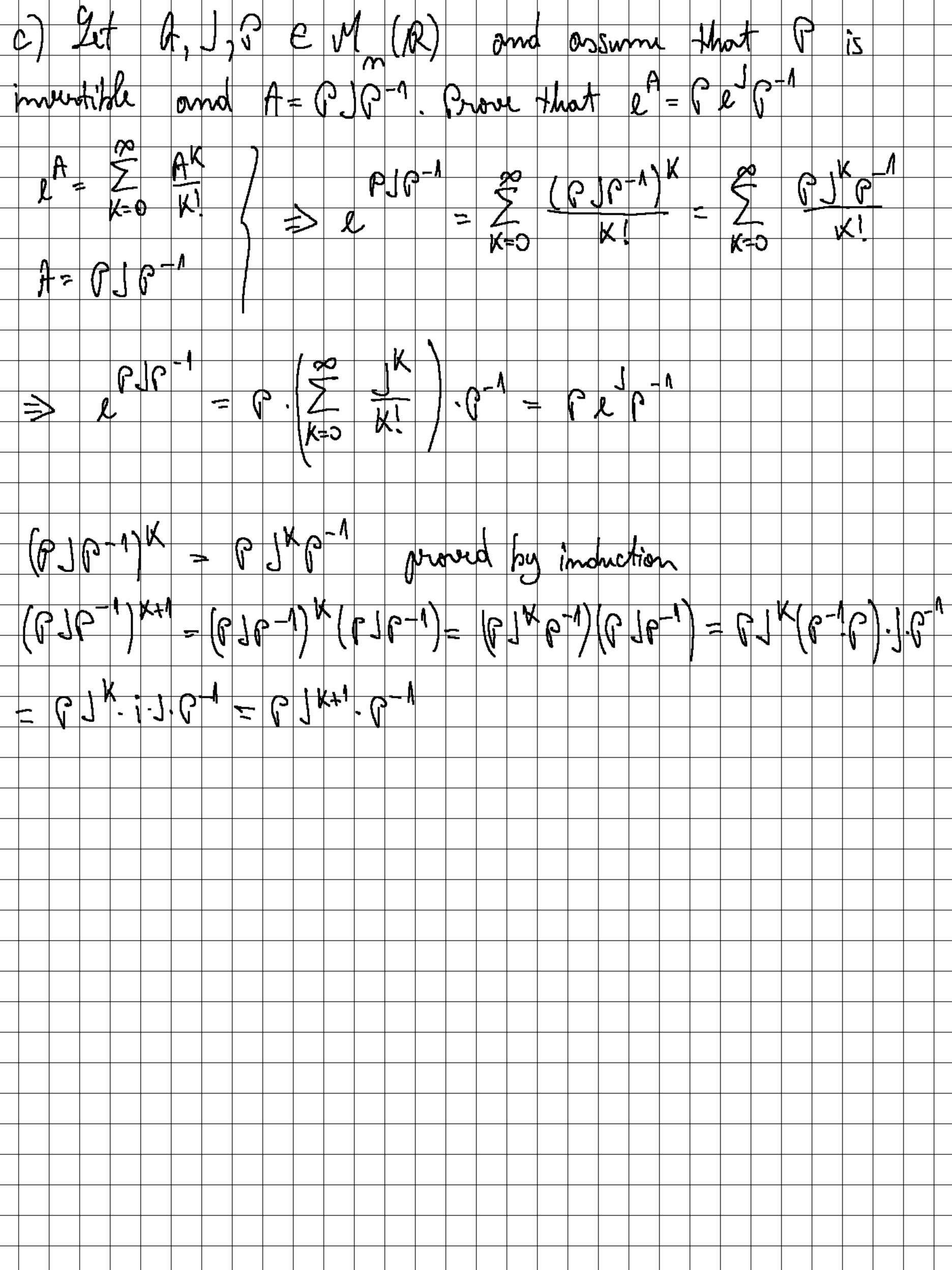
roitusor O= + 10 D(0) = I Θ (0) = 0 Which models the motion of a simple gravity rendulum. After how much time the pendulum will outure to the state? Here O(t) is the angle at time to between vertical. Mu time is measured the and the ongle in radions. minutes, and 0-(t)= C1- cos 3t + C2 sin st $-f(0) = \frac{11}{2} \Rightarrow C_1 - coso + C_2 sin 0 = \frac{17}{2}$ 0-1(t)=-3Cn sin3t+3C20033t (0) = -3(15/200 + 3C20000 = 3C2 (t) = 1 ws 3t

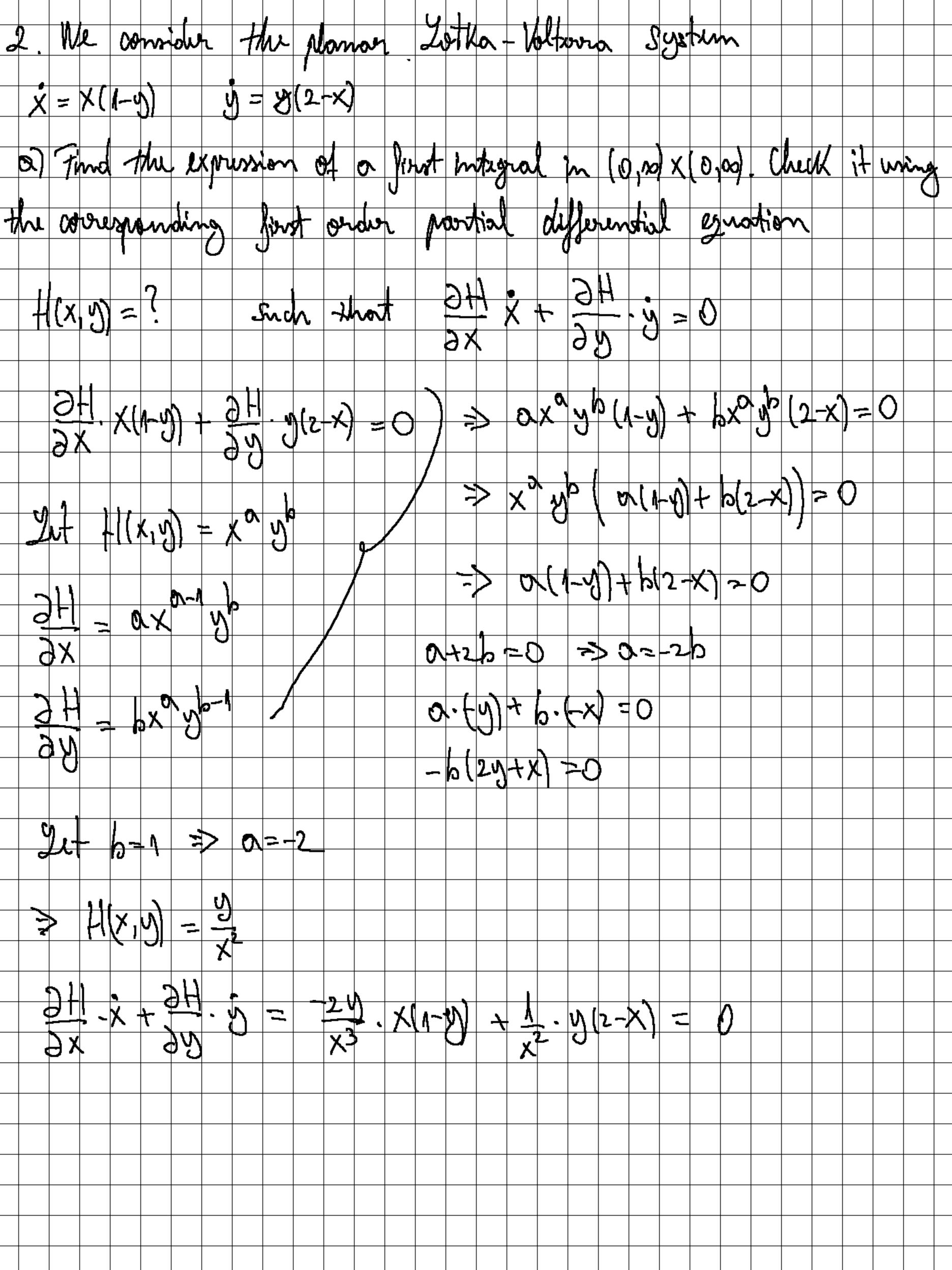


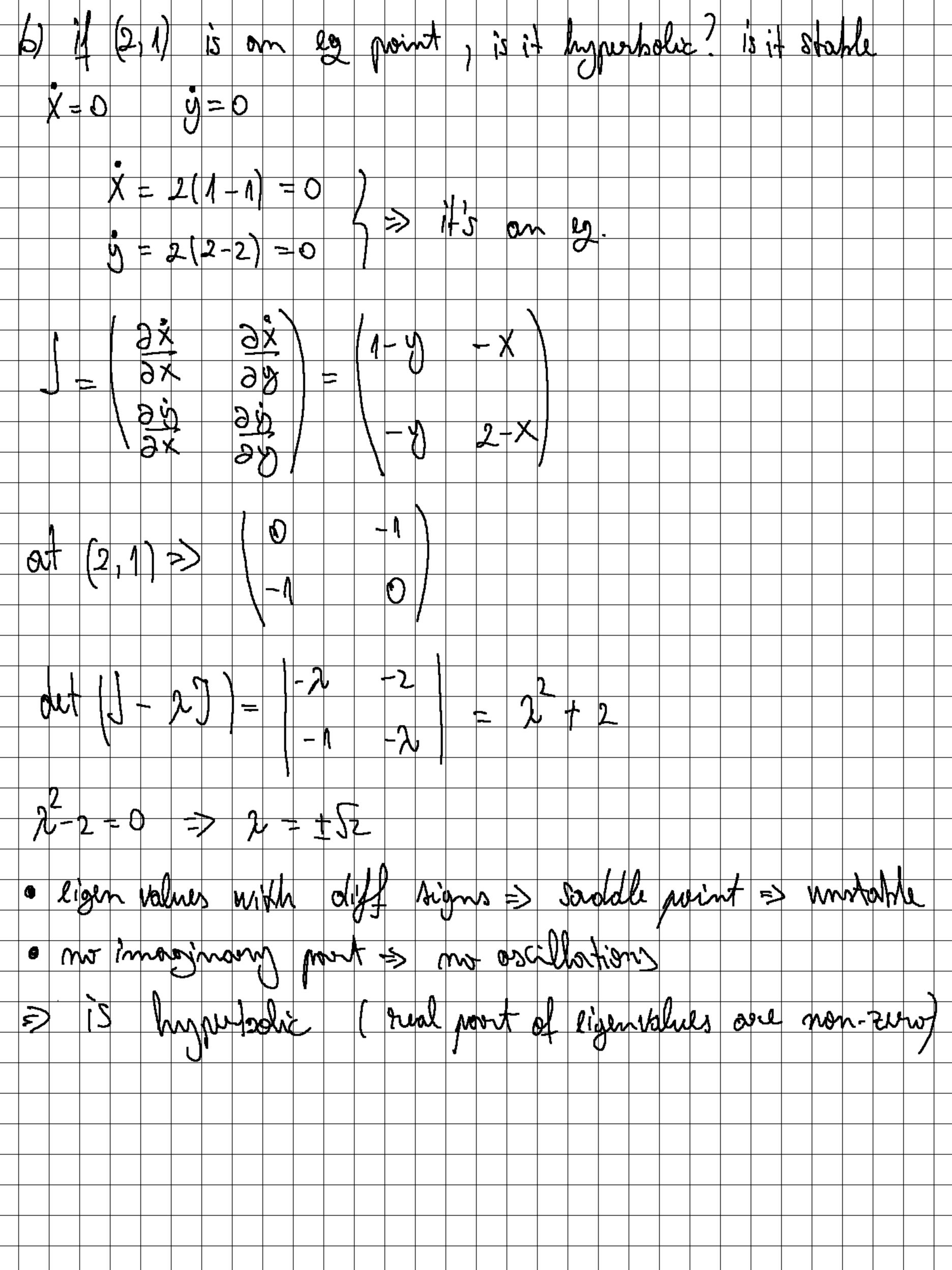


0/5 = 25 N = 002 $-x_2 + h = 0,06$ h2 + h (1+ x2 y2) =0,06 go 27472 0'2) We 20,5 =>> 1 (1) iturate 50 times We N= -50 Exam 2023 14; June 6 A - Write a representantion R 0 Me arrol Jammo nortunes 01 3









3. Find the solution of lock of the flowing ivp's

$$x' + 3x = 2 \qquad \times (0) = 0$$

$$x' + 3x = 0$$

$$9 + 3 = 0 \Rightarrow n = -3 \Rightarrow x_1 = C_1 \cdot 1$$

$$x' + 3x = 2 \Rightarrow k' + 3k = 2 \Rightarrow k = \frac{2}{3}$$

$$x_1 = k \Rightarrow x_1 + 1 = x_1 + x_2 = C_1 \cdot 1 + \frac{2}{3}$$

$$x(0) = 0 \Rightarrow C_1 + \frac{2}{3} = 0 \Rightarrow C_4 = -\frac{1}{3}$$

$$\Rightarrow x(1+) = -\frac{2}{3} \cdot 1 + \frac{2}{3}$$

$$\Rightarrow x(1+) = -\frac{2}{3} \cdot 1 +$$

14 - 2023: salon difference essation: We consider the X x+1 = X x + } of real numbers (XX) K20 mos mknom is the seguence where $\lambda \in (0,1)$ is a povernitur Tind its constant Solutions (fixed points) and study this obulation X41 = Xx = Ixed rooms are X to be stable

