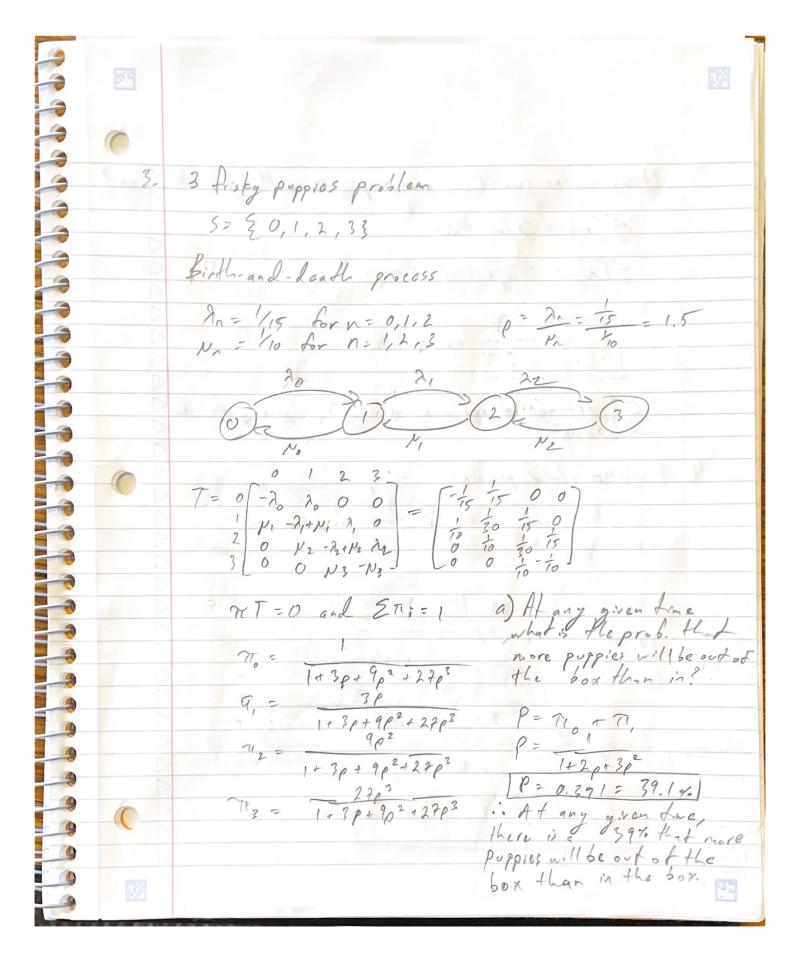
Agustr Espinan SIE321 HW10 4/14/23 1. Small two-bay cor-wash operation problem 2= = costomers/min, N= q costomors/min, 5=2 sorvers Multi-server finite-queve model (M/M/3/K) $P = \frac{\lambda}{5p}$ $P = \frac{(1/5)}{(1/1)} = 0.9$ $P = \frac{(1/5)}{(1/1)} = 0.9$ $\frac{(\frac{\lambda}{5})^{n}}{(\frac{\lambda}{5})^{n}} = 0.8$ $\frac{(\frac{\lambda}{5})^{n}}{(\frac{\lambda}{5})^{n}} = 0.8$ al Expected fraction of potential enstoners that will be lost because of inadequate walting space: $P_{3} = \frac{(1-p)}{(1-p^{3+1})}p^{2} = \frac{1-0.9}{(1-0.3)^{4}}(0.8)^{3} = 0.173$ P2=0.1731 b) Py = (1-e) (p5) - (1-p6) = (1-0.8) (0.8) P5=0.039

torrester Manufacturing Conogany problem query mode nathres not renning, and the mean of dorhibution Single-server quevery systems (MM/1) E[n]= -y=0.25=25% Wg = 0.125



b) on average, how many puppies will be in the box? 5[n] = 5 i = 03in; E[n] = 07 + /1, +27, +37, |S[n]=1.75| :. On average, there will be 1.75 puppies outs; le Especiso stand problem. 2 = 40 erstomers/hr = \frac{2}{3} costomers/mig a) Fud L, Lg, W, Wg 1 = 1 = 2 = 5 customers. 1g = 1 - 2 = 5 - 3 = 4.167 customers N= = = = 7.5 min Ng = 1 = 4.167 = 6.25 min

Suppose Marsha is replaced by an expresso vanding machine that requires exactly 755 for each exstance to operate. Find L, Lg, W, Wg M/D/I model 7 - 40 cytomers (b) N= 18 customars/hr P= 3 = 40 = 0.83 $g = (e^2) = (0.83)^2 = 2.026$ ers homers 2(1-e) = 2(1-e) = 2(1-0.83)Wg = 19 - 2.63 = 0.05 hrs/custoner Lq + P= 203 + 0.83 = 2.86 wshomers N= Wq + 1 = 0.05 + 48 = 0.071 hrs/customer

Shoe repair store problem N: 1 25 costoners/hr a) calculate the expected # of pures of show is shop 1 = 2 = 2 = 2 = 0.69 1 2 0.67 pairs of shoes from show getting dropped of from they are repared and probed up. W= 0.69 = 0.335 W=0.335 hr = 20.1 mis