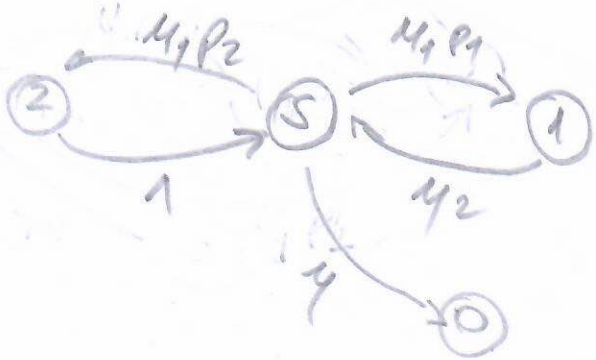
HOMEWORK 23

JUAN PABLO ROYO SALES.

PROBLEM 23.1

23.1.A

states
0: idle
1: type 1 fail
2: " 2 fail
S: serving



23.1.B

$$E[S] = T_S + T_1 + T_2$$
$$= \frac{1}{\mu} + \frac{1}{\mu_1} + \frac{1}{\mu_2}$$
$$= 1 + 3 + \frac{4}{3}$$
$$= \boxed{\frac{16}{3}}$$

$$E[S^2] = VAR(S) + E[S]^2$$
$$= \frac{1}{\mu^2} + \frac{1}{\mu_1^2} + \frac{1}{\mu_2^2} + \left[\frac{1}{\mu} + \frac{1}{\mu_1} + \frac{1}{\mu_2}\right]^2$$
$$= 1 + \frac{1}{9} + \frac{9}{16} + \frac{256}{9} = \boxed{\frac{4337}{144}} = \boxed{30.12}$$

23.1.C

$$W = \frac{\lambda E[S^2]}{2(1-\rho)} \qquad \rho = \lambda E[S] \qquad \rho = \frac{8}{15}$$

$$W = \frac{1/10 \cdot 4337/144}{14/15}$$

$$W = \frac{4337}{1344} = 3.46$$

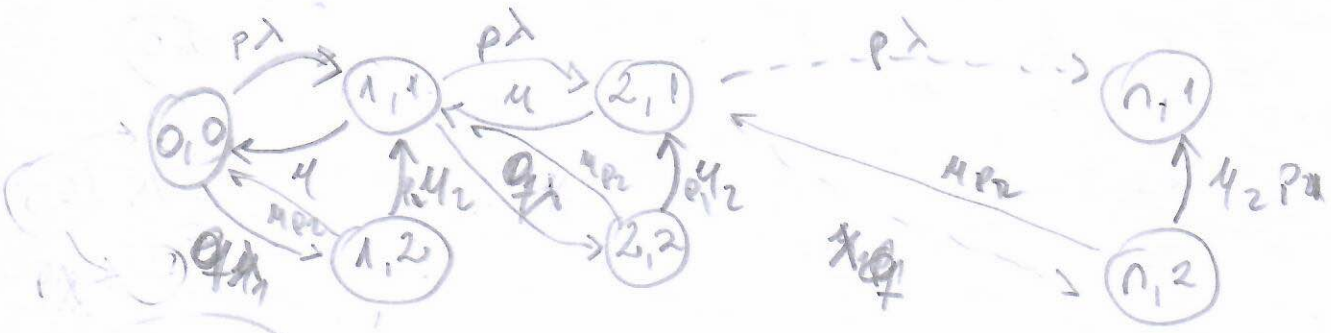
23.1.D

$$N = \lambda T$$

$$N = \frac{1}{10} \cdot 3.46$$

$$N = 0.35$$

23.1.E



23.1.F

$$\rho = \frac{8}{3}$$

$$\rho_1 = \frac{1}{3}$$

IM NOT SURE ABOUT THIS