REVIEW PROBLEMS No. 17

Textbook: Problems 18.1, 18.2

$$\text{Poisson } (\lambda) \longrightarrow \boxed{\mu_1} \longrightarrow \boxed{\mu_2} \longrightarrow$$
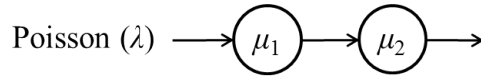
Figure 1: Two servers in tandem.

Problem S17.1 Consider the system of Fig. 1, consisting of two single server facilities in tandem with service rates μ_1 and μ_2, respectively. Neither facility has a waiting room, and any job that arrives to a busy server is lost. Note that this means that a job leaving server 1 while server 2 is still busy with another job is lost. Does this system admit a product form limiting distribution, *i.e.,* the number of jobs at server 1 is independent of the number of jobs at server 2. Whether yes or no, justify your answer. **Hint**: construct a Markov chain representation for the system and solve for its limiting distribution.