Question

Cars arrive at a service centre at the rate of 50 per week. The refinery has one service station with an average service rate of 70 cars per week. Assume Poisson input and exponential service. The service centre has a second service station with a daily rent of Rs. 300. The service time for this station would also be exponential with the same rate as its old station. For each lost week of a car while at the centre the company loses Rs. 2500.

a) What is the mean number of cars at the service centre?
b) What is the mean time spent by a cars at a service centre?
c) Is this arrangement profitable for the service centre?