

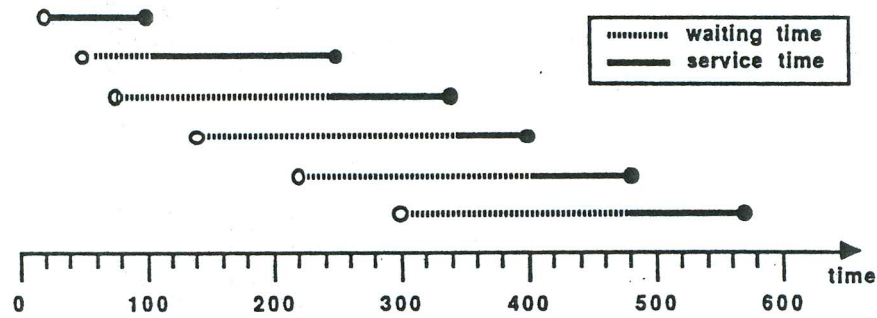
From MacDougall (1987)

$\alpha = 20, 30, 25, 65, 80, 80$

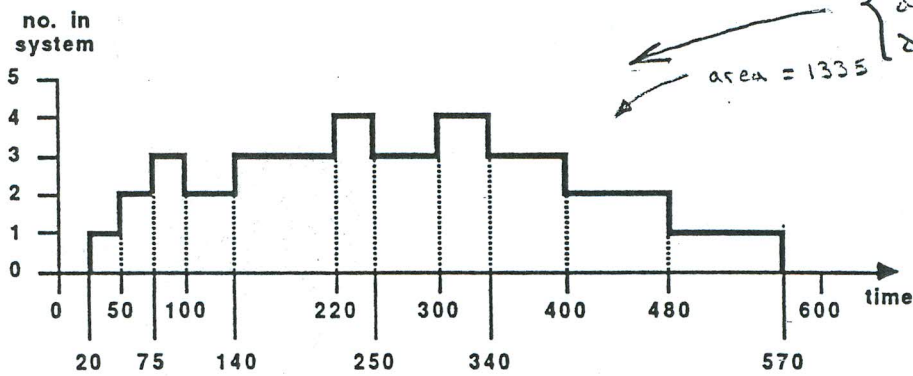
$x = 80, 150, 90, 60, 80, 90$



$c = 6$



(a)



(b)

Figure 1.5. Queuing System Behavior

throughput: $X = 6/600 = 0.01$

total busy time: $B = (100-20) + (250-100) + \dots + (570-480) = 550$

mean service time: $T_s = 550/6 = 91.7$

utilization: $U = 550/600 = 0.917$, or $U = 0.01 \times 91.7 = 0.917$

residence time sum: $\sum w_i = (100-20) + (250-50) + \dots + (570-300) = 1335$

mean residence time: $W = 1335/6 = 222.5$

mean queueing time: $W_q = 222.5 - 91.7 = 130.8$

mean number in system: $L = 1335/600 = 2.225$

mean number in queue: $L_q = 2.225 - 0.917 = 1.308$