IEOR 263A PS 9

Do Chapter 7 problems: 13, 14 (optional), 15, 16, 34, 37. Also:

1. For a renewal process with inter-event time X, what's $\lim_{t\to\infty} m(t+0.5) - m(t)$ for the following? Justify your answers.

   (a) $X = 1$ with probability 1.

   (b) $X \sim unif(0,1) + 1$.

2. (optional) Using the renewal reward theorem show that when $\lambda ES = 1$ for an M/G/1/n queue, the expected number of losses during a busy period is 1 for all n. Hint: Note that all arrivals are either lost or served. Derive renewal-reward equations for the total arrival rate and the long-run effective service rate (which will be less than $\mu = 1/ES = \lambda$). By conditioning on whether the server is busy, derive another equation for the long-run effective service rate.