Math 632 – Spring 2012

Homework 5

Due: Tuesday, November 6th.

1. Exercise 2.26.
2. Exercise 2.28.
3. Exercise 2.38.
4. Exercise 2.44.
5. Exercise 2.47
6. Exercise 2.58.
7. Exercise 3.1.
8. Exercise 3.6.
9. Exercise 3.16. In order to see the benefit of this new strategy, begin by computing the long run cost per unit time if no replacement is made.
10. For a homogeneous Poisson process $\{N(t), t \geq 0\}$ of rate 1, we know from renewal theory that
$$\lim_{t\to\infty} \frac{1}{t} N(t) = 1.$$
If N' is a non-homogeneous Poisson process with intensity
$$\lambda(t) = \frac{1}{1+t},$$
what is the asymptotic form of $N'(t)$? That is, find a function $\gamma(t)$ such that
$$\lim_{t\to\infty} \frac{1}{\gamma(t)} N'(t)$$
exists and is finite. *Hint:* How can we represent a non-homogeneous Poisson process with intensity $\lambda(t)$?