

Due Tuesday, Nov 6

Solve the following problems and staple your solutions to this cover sheet.

1. Exercise 4.84
2. Exercise 4.87
3. Exercise 4.88
4. Exercise 4.96
5. Exercise 7.3
6. Exercise 7.4
7. Exercise 7.9
8. Find the exact value of the following integral.

$$\int_0^{\infty} \frac{y^7 e^{-\frac{y}{2}}}{2^4 \Gamma(4)} dy$$

9. The number of arrivals Y at the registrars counter in an one-hour period has a Poisson distribution with mean 5. Let X denote the length of the time until the first arrival in a given one-hour period. Find the cumulative distribution function of X and show that X is exponentially distributed. Hints: Find $F(x) = P(X \leq x)$, see class notes. Then find $f(x) = F'(x)$.
10. The annual rainfall, in inches, in a certain region is normally distributed with mean 40 and variance 36. What is the probability that the annual rainfall will be between 34 and 52 inches? What is the probability that the annual rainfall will exceed 47.5 inches? Assuming that the annual rainfall in consecutive years are independent random variables, what is the probability that the rainfall will exceed 47.5 inches for two years in a row?