EE 605-A / CS 505-A: Probability and Stochastic Processes I

Stevens Institute of Technology

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Homework 5 - 200 points

1) Derive the mean and variance of a continuous random variable $T \sim Exponential(\beta)$ with pdf

$$g_T(t) = \beta e^{-\beta t}$$

2) Derive the mean and variance of a continuous random variable $X \sim Gaussian(\mu, \sigma^2)$ with pdf

$$f_X(x) = \frac{1}{\sqrt{2\pi\sigma^2}} e^{-\frac{(x-\mu)^2}{2\sigma^2}}$$

From Chapter 3, section 3.3 on End of chapter problems, please solve

3) Problem 11
4) Problem 12
5) Problem 14
6) Problem 16

From Chapter 4, section 4.4 on End of chapter problems, please solve

7) Problem 2
8) Problem 7
9) Problem 8
10) Problem 12

Each problem is worth 20 points.