

Massachusetts Institute of Technology  
Department of Electrical Engineering and Computer Science

6.011: SIGNALS, SYSTEMS AND INFERENCE

Spring 2018

**Problem Set 5**  
**Probabilistic Models, Random Variables**

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**Reading:** Chapters 7 and 8

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**Problem 5.1**

Problem 7.1, but add on as parts (c) and (d) the two parts of Problem 7.7. (These problems have the same numbers in the softcover edition.)

**Problem 5.2**

Problem 7.6, part (a) only (this is Problem 7.4(a) in the softcover edition).

**Problem 5.3**

Problem 8.26. In part (f), the “MMSE estimate” referred to is

$$E[R | X_1 = x_1, X_2 = x_2, \dots, X_n = x_n].$$

(This is Problem 8.31 in the softcover edition.)

**Problem 5.4 (Optional)**

Problems 7.3, 7.4 and 7.12 (which are Problems 7.2, 7.5 and 7.8 in the softcover edition).

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