

*Stat 134: Section 16*

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***Conceptual Review***

Please discuss these short questions with those around you in section. These problems are intended to highlight concepts from lecture that will be relevant for today's problems.

- a. What is an order statistic?
- b. What have we learned in Chapter 4 so far?

*Problem 1*

Suppose the random variable  $U$  is distributed uniformly on the interval  $(0, 1)$ . Find the density of the random variable  $Y = \min(U, 1 - U)$  and indicate where the density is positive.

*Ex 4.rev.25 in Pitman's Probability*

*Problem 2*

Four people agree to meet at a cafe at noon. Suppose each person arrives at a time chosen uniformly at random between 11:45 am and 12:15 pm, independently of the others.

- (a) What is the chance that the first person to arrive at the cafe gets there before 11:50?
- (b) What is the chance that some of the four have not arrived by 12:10?
- (c) Suppose that if all 4 people have shown up before 12:10, the waiter takes their orders as soon as the fourth person arrives. Otherwise, the waiter takes the orders of whoever is there at 12:10 pm. Let  $T$  represent the time at which the waiter takes their order. Find and sketch the cdf of  $T$ .

*From Ex 4.6.1 in Pitman's Probability*