King Fahd University of Petroleum & Minerals
Department of Mathematics & Statistics
STAT-319-Term162
Quiz #3

Name: ID: Serial:

Q 1: The reaction time (in seconds) to a certain stimulus is continuous random variable with probability density function

$$f(x) = \frac{3}{2x^2}, \quad 1 \leq x \leq 3$$

a. Obtain the cumulative distribution function.

b. What is the probability that the reaction time is between 1.5 and 2.5 second?

c. What is the expected reaction time

Q 2: A pumping station operator observes that the demand for water at a certain hour of the day can be modeled as an exponential random variable with a mean of 100 cfs (cubic feet per second).

a. Find the probability that the demand will exceed 200 cfs on a randomly selected day.

b. What is the maximum water producing capacity that the station should keep on line for this hour so that the demand will have a probability of only 0.01 of exceeding this production capacity?

Q 3: Wires manufactured for a certain computer system are specified to have a resistance of between 0.12 and 0.14 ohm. The actual measured resistances of the wires produced by Company *A* have a normal probability distribution, with a mean of 0.13 ohms, and a standard deviation of 0.005 ohms.

a. What is the probability that a randomly selected wire from Company *A*'s production lot will meet the specifications?

b. If four such wires are used in a single system and all are selected from Company *A*, what is the probability that all four will meet the specifications?