(Due Wednesday 10/24/2018 right before class)

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(Your homework shall be stapled if it contains multiple pages.)

FALL/2018/MA526: HOMEWORK 9

Instructor: Guangqu Zheng[1]; Grader: Chessa Mccalla[2]

Total points: 20.

Q1 (3pt) Find the PDF of X^3, where X is the standard normal random variable.

Q2 (6pt) In a human factor experimental project, it has been determined that the reaction time of a pilot to a visual stimulus is normally distributed with a mean of $1/2$ second and standard deviation of $2/5$ second.

(a) What is the probability that a reaction from the pilot takes more than 0.3 second?

(b) What reaction time is that which is exceeded 95% of the time?

Q3 (6pt) The density function of the time T in minutes between calls to an electrical supply store is given by

$$f(x) = \begin{cases} \frac{1}{10}e^{-x/10}, & x \geq 0 \\ \\ 0 \quad elsewhere \end{cases}$$

(a) What is the mean time between calls?

(b) What is the variance in the time between calls?

(c) What is the probability that the time between calls exceeds the mean?

Q4 (5pt) The lengths of time, in minutes, that 10 patients waited in a doctor?s office before receiving treatment were recorded as follows: 5, 11, 9, 5, 10, 15, 6, 10, 5, and 10. Treating the data as a random sample, find

(a) the mean;

(b) the median;

(c) the mode;

(d) the standard deviation;

(e) the range.

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