

201-AS-389-01(Actuarial Sci. Problem Lab II)


Online Assessment # 2

Total Points: 50

Total Weight: 15%

**Question 1**

A supplier faces a daily demand ( $X$ ) with continuous uniform distribution between 160 and 670. His profit is given by  $Y = 10\sqrt{X} + 2$ . What is his average daily profit?

Correct Answer:  198.244


**Question 2**

Let  $X$  and  $Y$  be random variables with joint pdf given by  $f(x,y) = 0.46 * 0.13 * \exp(-0.46x - 0.13y)$ ;  $x > 0$  and  $y > 0$ . Find  $P(X < 9.2)$  correct up to 4 decimal points.

Correct Answer:   $0.985 \pm 0.005$


**Question 3**

Suppose that your journey time from home to campus is normally distributed with mean equal to 9 minutes and standard deviation equal to 5.1 minutes. What is the latest time that you should leave home if you want to be 83% sure of arriving in time for a class at 2pm?

Correct Answer:  1:46 pm

**Question 4**

The time to failure of a component in an electronic device has an exponential distribution with 93th percentile of 6.3 hours. Calculate the probability that the component will work without failing for at least 3 hours. At every step, round to 4 decimal points.

Correct Answer:  0.2819

**Question 5**

Let  $X$  and  $Y$  have the joint distribution  $f(x,y) = k$ ;  $0 < y < x < 9.2$ . Find the value of  $k$  correct upto 4 decimal points.

Correct Answer:   $0.024 \pm 0.005$