Assignment 5

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2019-03-06, 23:59 IST.

1) IQ levels of the candidates for a particular job selection are normally distributed with mean and standard deviation 5. Find the approximate probability that a randomly selected candidate has IQ level between 85 and 95.

   a. 0.251  
   b. 0.317  
   c. 0.682  
   d. 0.749

No, the answer is incorrect.
Score: 0
Accepted Answers: c.

2) In Question 1, suppose four candidates are randomly selected. Find the approximate probability that at least two of them have IQ levels between 85 and 95.

   a. 0.097  
   b. 0.903  
   c. 0.734  
   d. 0.266

No, the answer is incorrect.
Score: 0
Accepted Answers: b.
The time (in minutes) between arrivals of customers at an ATM machine is exponentially distributed random variable with mean 10 minutes. What is the probability that starting at 9: a.m., the third customer will arrive within fifteen minutes?

a. \(1 - \frac{20}{8} e^{-\frac{3}{2}}\)

b. \(1 - \frac{20}{16} e^{-\frac{3}{2}}\)

c. \(1 - \frac{20}{8} e^{-\frac{3}{2}}\)

d. \(1 - \frac{20}{16} e^{-\frac{3}{2}}\)

No, the answer is incorrect.
Score: 0
Accepted Answers:
a.

4)

Trains arrive and depart at Kanpur railway station according to a Poisson process at a rate of per three minutes. What is the probability that between 2:00 p.m. to 3:00 p.m. the number of trains arriving or departing is at least 17 and not more than 25? Use normal approximation with continuity corrections.

a. 0.477
b. 0.523
c. 0.327
d. 0.672

No, the answer is incorrect.
Score: 0
Accepted Answers:
d.

5)

Let \(X\) be a normal distribution with mean \(\mu\) and variance \(\sigma^2\). Let \(Z = \frac{X - \mu}{\sigma}\). Suppose \(Z = -1.25\) when \(X = 40\) and \(Z = 1.98\) when \(X = 60\). Find the \(P(|X - 40| > 10)\)?

a. 0.182
b. 0.643
c. 0.358
d. 0.818
c. No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
c.

6) Let $X$ be a continuous random variable with the density function given by

$$f_X(x) = \begin{cases} \frac{1}{6} \left(1 - \frac{|x|}{6}\right), & -6 < x < 6 \\ 0, & \text{otherwise} \end{cases}$$

Find the probability $P(|X| \leq 5)$.

a. $\frac{1}{36}$

b. $\frac{35}{36}$

c. $\frac{3}{36}$

d. $\frac{32}{36}$

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
b.

7) Let $X$ denote the hitting time (in second) of a bullet in a given target. Assume $X$ follows a lognormal distribution with mean 1.5 and standard deviation 0.9. Between what two values will $X$ fall approximately with probability 0.95?

a. [0.231, 26.04]

b. [0.768, 26.04]

c. [0.771, 16.34]

d. [0.231, 16.34]

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
d.
The time (in hours) required to repair an LCD TV is exponentially distributed with mean \( \frac{1}{3} \) hours. What is the probability that a repair requires less than 5 hours given that it will require at least 1 hour?

a. \( e^{-\frac{1}{3}} \)  

b. \( e^{-5} \)  

c. \( 1 - e^{-\frac{1}{3}} \)  

d. \( 1 - e^{-5} \)  

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
d.

In a probability and statistics class, the total number of students is 200. A professor gives a question to the students as a surprise test. The probability that a randomly selected student can solve the question is 0.5. What is the probability that at least 110 students in the class can solve the question? Use normal approximation to binomial (without continuity corrections).

a. 0.243  
b. 0.921  
c. 0.079  
d. 0.757  

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
c.

10) Let \( X \) be a continuous random variable whose density is given as

\[
f(x, \theta) = \left( \theta x + \frac{1}{2} \right) f_{X \sim H}(x),
\]

Find the value of \( \theta \) so that variance of \( X \) is maximized.

a. 0  
b. 0.2  
c. 0.3  
d. 0.5  


No, the answer is incorrect.
Score: 0
Accepted Answers:
a.