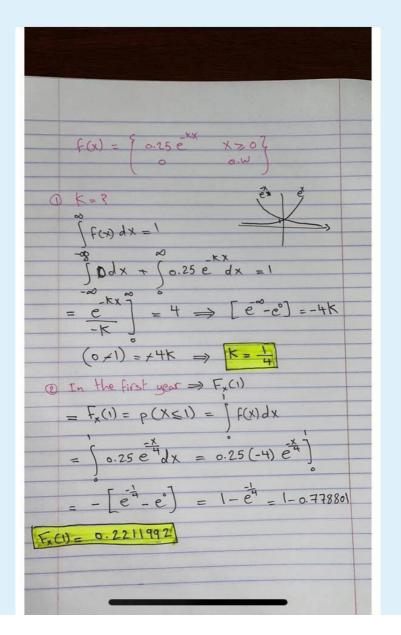


by the manufacturer of a washing machine that the time X (in years) before a major repair is required is characterized by the probability density function

$$f(x) = \begin{cases} 0.25e^{-Kx} & x \ge 0; \\ 0 & \text{otherwise} \end{cases}$$

- 1. Determine the value of the constant K.
- 2. What is the probability that a major repair occurs in the first year?



## Question 1

Correct

Mark 5.00 out of 5.00

Let  $f_X(x)$  be the probability density function of the random variable X.

$$f(x) = \begin{cases} \frac{3}{(4)^3 - (-3)^3} x^2, & -3 \le x \le 4; \\ 0, & \text{otherwise.} \end{cases}$$

Determine  $F_X(-0.8)$ 

Answer:

0.29108

The correct answer is: 0.29108

# Question **2**

Correct

Mark 5.00 out of 5.00

♥ Flag question

Let  $f_X(x)$  be the probability density function of the random variable X.

 $f(x) = \begin{cases} (2/10^2) x, & 0 \le x \le 10; \\ 0, & \text{otherwise.} \end{cases}$ 

Find the mean of X.

Answer:

6.66667

## The correct answer is: 6.66667

# Question 3

Correct

Mark 5.00 out of 5.00

Let  $f_X(x)$  be the probability density function of the random variable X.

$$f(x) = \begin{cases} (2/10^2) x, & 0 \le x \le 10; \\ 0, & \text{otherwise.} \end{cases}$$

Find the variance of X.

Answer:

5.55556

The correct answer is: 5.55556

Question 1

Correct

Mark 5.00 out of 5.00

♥ Flag question

Let X be a random variable with a uniform distribution over the interval [-4 , 4]. Determine the variance of X.

Answer:



The correct answer is: 5.333333

Question 2

Incorrect

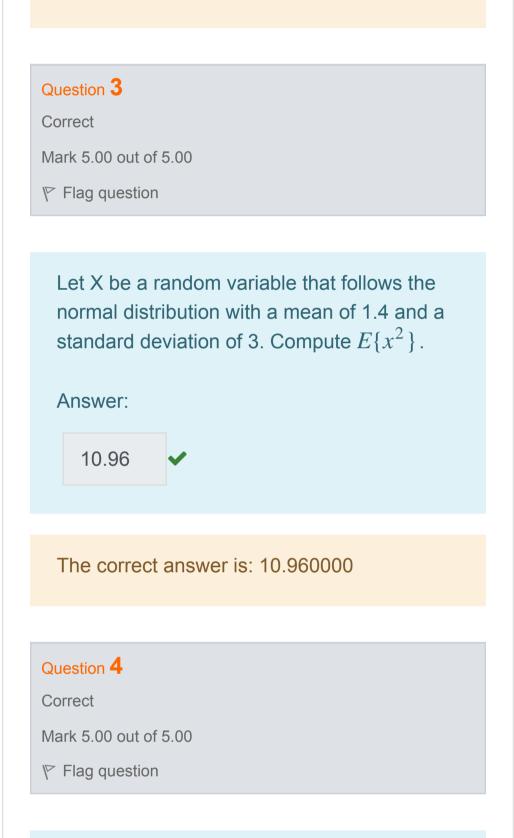
Mark 0.00 out of 5.00

The number of cars that arrive at a certain intersection follows the Poisson distribution with a rate of 0.6 cars/min. What is the probability that at least two cars arrive in a 2.6 minutes period?

Answer:

0.32957 🗙

The correct answer is: 0.462052



The lifetime X of a certain electronic component is an exponential random variable with a mean of 2 hours. Assuming 3 of these components operate independently in a device. The device operates if all components operate. Find the probability that the device operates for at least 2 hours.

Answer:

0.04979 🗸

#### The correct answer is: 0.049787

# Question 5

Incorrect

Mark 0.00 out of 5.00

A multiple-choice exam contains 59 questions, each with 4 options (one is the correct answer). Assume that a student, who did not study well on the exam, decided to just guess on each answer. To pass the exam, a student must answer at least 22 questions correctly. Use the normal approximation to find the probability that a student will pass the exam?

Answer:

0.01215 🗙

The correct answer is: 0.014682