

# Exercise for Week 4

⚠ This is a preview of the published version of the quiz

Started: 4 Sep at 16:38

## Quiz instructions

Quiz time is from 09:15am to 10:30am of August 30.

### Question 1

1 pts

Suppose 10% of the population are infested with a certain virus. The probability for a truly infested person to be tested positive is 0.8; while the probability for a non-infested person to be tested positive is  $1/90$ . If Mike is tested positive, what is the probability that he is truly infested by the virus?

- ☐  $4/5$
- ☐  $8/9$
- ☐  $9/10$
- ☐ None of the given options

### Question 2

1 pts

Let  $X$  be a random variable. Which of the following is **INCORRECT**?

- ☐ If  $X$  is a **continuous** random variable and  $x_1, x_2, x_3, x_4$  are arbitrary real numbers, we must have

$$P(X = x_1, \text{ or } X = x_2, \text{ or } X = x_3, \text{ or } X = x_4) = 0.$$

- ☐ If  $X$  is a **discrete** random variable, then, we can find a real number  $x$ , such that  $P(X = x) \neq 0$ .
- ☐ If  $X$  is a **discrete** random variable, then, we can find a real number  $x$ , such that

$$P(X = x) = 0.$$

- ☐ All are correct

### Question 3

1 pts

The probability mass function for a discrete random variable  $X$  is given below.

$x$	0	2	5
$f(x)$	1/3	1/2	1/6

Which of the following is its cumulative distribution function?

☐ 
$$F(x) = \begin{cases} 0, & x < 0 \\ 1/3, & 0 \leq x < 2 \\ 5/6, & 2 \leq x < 5 \\ 1, & 5 \leq x \end{cases}$$

☐ 
$$F(x) = \begin{cases} 0, & x < 0 \\ 1/3, & 0 \leq x < 2 \\ 2/3, & 2 \leq x < 5 \\ 1/3, & 5 \leq x \end{cases}$$

☐ 
$$F(x) = \begin{cases} 0, & x \leq 0 \\ 1/3, & 0 < x \leq 2 \\ 5/6, & 2 < x \leq 5 \\ 1, & 5 < x \end{cases}$$

☐ 
$$F(x) = \begin{cases} 1/3, & x = 0 \\ 5/6, & x = 2 \\ 1, & x = 5 \end{cases}$$

and  $F(x) = 0$ , elsewhere.

Saved at 16:39

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