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NPTEL

reviewer3@nptel.iitm.ac.in ▾

Courses » Introduction to Probability Theory and Stochastic Processes

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Unit 2 - Week 0: Review Assignment

Course outline

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Review Assignment

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment. **Due on 2018-07-31, 23:59 IST.**

Each of the following questions has four options out of which one or more options can be correct. **2 marks** are awarded if all correct choices are marked, **0 marks** for no answer and **0 marks** for any wrong answer. In case of multiple answers partial marks are given for each correct answer but if a correct and an incorrect answer are chosen, then, **0 marks** will be awarded.

1) What is the probability of getting a sum 8 from two throws of a dice? ***2 points***

- $\frac{8}{36}$
- $\frac{3}{36}$
- $\frac{5}{36}$
- $\frac{7}{36}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$\frac{5}{36}$

2) In a class, 40% of the students study math and science. 60% of the students study math. What is the probability of a student studying science given he/she is already studying math(approximate answer upto two decimal places)? ***2 points***

- 0.2
- 0.67
- 0.24

3) If A and B are two independent events, then identify the correct statement(s) **2 points**

- $P(\bar{A} \bigcap \bar{B}) = P(\bar{A})P(\bar{B})$
- $P(\bar{A} \bigcup \bar{B}) = P(\bar{A})P(\bar{B})$
- $P(A \bigcap B) = P(A) + P(B)$
- $P(A \bigcup B) = P(A)P(B)$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$P(\bar{A} \bigcap \bar{B}) = P(\bar{A})P(\bar{B})$

4) What is the value of the following integral **2 points**
$\int_0^\infty x^3 \exp(-2x)dx$

- Does not exist
- $\frac{3}{2}$
- $\frac{3}{8}$
- 1

No, the answer is incorrect.
Score: 0

Accepted Answers:
$\frac{3}{8}$

5) What is the value of the following integral **2 points**
$\int_{-1}^1 \exp(5x)(1 - |x|)dx$

- $\frac{1}{5}$
- $\frac{\exp(5)}{25}$
- $\frac{\exp(5)+\exp(-5)-2}{25}$
- $\frac{\exp(-5)}{25}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$\frac{\exp(5)+\exp(-5)-2}{25}$

6) Compute the limit $\lim_{x\to 2} \frac{x^2-4}{x^2-3x+2}$ **2 points**

- Does not exist
- 2

- 4
- 1

No, the answer is incorrect.
Score: 0

Accepted Answers:
4

7) If a function $g(t)$ is defined as **2 points**

$$g(t) = \int_{-\infty}^{\infty} \exp\left(xt - \frac{(x-2)^2}{2}\right) dx.$$

Then what is the value of the second order derivative of $g(t)$ at $t = 0$, if it exists?

- Does not exist
- $\sqrt{2\pi}$
- $\sqrt{10\pi}$
- $5\sqrt{2\pi}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$5\sqrt{2\pi}$

8) Consider the following system of linear equations. **2 points**

$$\begin{aligned} -\frac{2}{3}x + \frac{2}{5}y + \frac{1}{4}z &= 0 \\ \frac{1}{3}x - \frac{3}{5}y + \frac{1}{2}z &= 0 \\ \frac{1}{3}x + \frac{1}{5}y - \frac{3}{4}z &= 0 \\ x + y + z &= 1 \end{aligned}$$

Identify the correct statement(s).

- The system has infinitely many solutions.
- $x = \frac{21}{62}, y = \frac{25}{62}, z = \frac{16}{62}$ is a solution.
- The system has no solution
- $x = \frac{25}{62}, y = \frac{16}{62}, z = \frac{21}{62}$ is a solution.

No, the answer is incorrect.
Score: 0

Accepted Answers:
$x = \frac{21}{62}, y = \frac{25}{62}, z = \frac{16}{62}$ *is a solution.*

9) Calculate the area contained between the curve $y = \cos(x), \ -\pi < x < \pi$ and the line **2 points**

$y = \frac{1}{\sqrt{2}}$

- $\sqrt{2}$
- $\frac{\sqrt{2}}{4}\pi$
- $\sqrt{2}-\frac{\sqrt{2}}{4}\pi$
- $\frac{1}{2}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$\sqrt{2}-\frac{\sqrt{2}}{4}\pi$

10) Consider the following function of two variables **2 points**

$f(x,y)=y(x-y),\ 2<x-y<10,\ 0<y<4.$

Evaluate the following double integral

$\int\int_S f(x,y)dxdy$

where
$S=\{(x,y);\ x,y\in\mathbb{R}, 2<x-y<10,\ 0<y<4\}$

- 106
- 384
- 48
- 24

No, the answer is incorrect.
Score: 0

Accepted Answers:
384

End