Assignment 5

The due date for submitting this assignment has passed.

Due on 2021-02-24, 23:59 IST.

As per our records you have not submitted this assignment.

1) The area of the region bounded by the curve $y = |x| + |x-1|$ in $-2 \le x \le 2$ is *1 point*

- 9
- 6
- 4
- 2

No, the answer is incorrect.
Score: 0
Accepted Answers:
9

2) Let $f : [0,2] \to \mathbb{R}$ be continuous and $\int_0^2 f(t)dt = 0$. Then which of the following is true *1 point*

- $\int_0^2 |f(t)|dt = 0$
- There exists $c \in [0,2]$ such that $2|f(c)| = \int_0^2 |f(t)|dt$.
- The equation $f(x) = 2(x-1)$ has no solution in $[0,2]$.
- The equation $f(x) = 0$ has no solution in $[0,2]$.

No, the answer is incorrect.
Score: 0
Accepted Answers:
There exists $c \in [0,2]$ such that $2|f(c)| = \int_0^2 |f(t)|dt$.

3) Let $f : [0,4] \to \mathbb{R}$ be a continuous function and $\int_0^{x^2} f(t)dt = x\cos \pi x, \forall x \in [0,2]$. Then the value of $f(4)$ is *1 point*

- 1
- $\frac{1}{2}$
- $\frac{1}{4}$
- 0

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\frac{1}{4}$

4) The value of $\int_0^{\pi/2} \cos^4 x dx$ is *1 point*

- $\frac{\pi}{16}$
- $\frac{2\pi}{16}$
- $\frac{3\pi}{16}$
- $\frac{5\pi}{16}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\frac{3\pi}{16}$

5) The value of $\int_1^e \frac{\ln x}{x^2} dx$ is *1 point*

- $1 + \frac{1}{e}$
- $1 - \frac{1}{e}$
- $1 + \frac{2}{e}$
- $1 - \frac{2}{e}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$1 - \frac{2}{e}$

6) Let T be the approximate value of the integral $I = \int_0^2 5x^4 dx$ using Trapezoidal rule with $n = 4$. Then $|T - I|$ is equal to *1 point*

- $\frac{53}{16}$
- $\frac{53}{32}$
- $\frac{53}{8}$
- $\frac{53}{64}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\frac{53}{16}$

7) Let S be the approximate value of the integral $I = \int_0^2 5x^4 dx$ using Simpson's rule with $n = 4$. Then $|S - I|$ is equal to *1 point*

- 0
- $\frac{1}{12}$
- $\frac{1}{4}$
- $\frac{1}{3}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\frac{1}{12}$

8) Let $f : [-1,1] \to \mathbb{R}$ be an integrable function. Then which of the following statement is true *1 point*

- If f is even, then $\int_0^1 f(x)dx = -\int_{-1}^0 f(x)dx$.
- If f is odd, then $\int_{-1}^1 f(x)dx = 2$.
- If $c \in \mathbb{R}$, then $\int_{-1}^1 f(x)dx = \int_{-1-c}^{1-c} f(x+c)dx$.
- If $c \in \mathbb{R} \setminus \{0\}$, then $\int_{-1}^1 f(x)dx = \int_{-c}^{c} f(\frac{x}{c})dx$.

No, the answer is incorrect.
Score: 0
Accepted Answers:
If $c \in \mathbb{R}$, then $\int_{-1}^1 f(x)dx = \int_{-1-c}^{1-c} f(x+c)dx$.

9) The value of $\int_0^1 x^2 e^{1-x} dx$ is *1 point*

- $2 - \frac{5}{e}$
- $2 + \frac{5}{e}$
- $2e + 5$
- $2e - 5$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$2e - 5$

10) The value of $\lim_{x \to 0} \frac{\int_0^{x^2} e^t dt}{\cos x - 1}$ is *1 point*

- 0
- 2
- -2
- ∞

No, the answer is incorrect.
Score: 0
Accepted Answers:
-2