

Course outline

How does an NPTEL online course work?

Week 1: Real number system and Limits

Week 2: Continuity and Differentiation of functions

Week 3: Plotting graph of functions

Week 4: L'Hospital Rule and Integration

Week 5: Integration and its numerical methods

Lecture 21: Integration and its properties

Lecture 22: Area and Mean value theorem for integrals

Lecture 23: Fundamental theorem of Calculus

Lecture 24: Integration by parts and Trapezoidal rule

Lecture 25: Simpson's rule and Substitution in integrals

Quiz : Assignment 5

Feedback For Week 5

Assignment 5 Solution

Week 6: Applications of Integration

Week 7: Improper Integrals, Sequences and Series

Week 8: Series and its convergence

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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 $-2 \leq x \leq 2$ is

1 point

9

6

4

2

 No, the answer is incorrect.
Score: 0

 Accepted Answers:
9

 2) Let $f : [0, 2] \rightarrow \mathbb{R}$ 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 $f : [0, 4] \rightarrow \mathbb{R}$ 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

 $\frac{1}{12}$

 $\frac{3}{4}$

 $\frac{1}{3}$

 No, the answer is incorrect.
Score: 0

 Accepted Answers:
 $\frac{1}{12}$

 8) Let $f : [-1, 1] \rightarrow \mathbb{R}$ 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 $\lim_{x \rightarrow 0} \frac{\int_0^{x^2} e^t dt}{\cos x - 1}$ is

1 point

0

2

 -2

 ∞

 No, the answer is incorrect.
Score: 0

 Accepted Answers:
 -2