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NPTEL

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Courses » Integral Equations,calculus of variations and its applications

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Unit 8 - Week 7

Assignment 7

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2018-09-19, 23:59 IST.

1) *The solution of the Cauchy type integral equation of the first kind* $\int_{-1}^{*1} \frac{g(t)dt}{t-s} = 1, \quad -1 < s < 1$ *is* **1 point**

- $g(s) = \dfrac{s}{\pi\sqrt{(1-s^2)}}$
- $g(s) = \dfrac{s+c}{\sqrt{(1-s^2)}}$
- $g(s) = \dfrac{s}{\sqrt{(1-s^2)}}$
- $g(s) = \dfrac{s+c}{\pi\sqrt{(1-s^2)}}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$g(s) = \dfrac{s+c}{\pi\sqrt{(1-s^2)}}$

2) *The solution of the Cauchy type integral equation of the second kind* $g(s) = s^2 + \frac{2}{\pi}\int_0^{*1} \frac{g(t)dt}{t-s}$ *is* **1 point**

- $g(s) = -\dfrac{s^2}{5} + \dfrac{2}{5\pi s^{1-\alpha}(1-s)^\alpha}\int_0^1 \dfrac{(1-t)^\alpha t^{3-\alpha}}{(t-s)}dt + \dfrac{c}{\sqrt{5}s^{1-\alpha}(1-s)^\alpha}, \; 0 < s < 1$
- $g(s) = -\dfrac{s^2}{5} + \dfrac{1}{s^{1-\alpha}(1-s)^\alpha}\int_0^1 \dfrac{(1-t)^\alpha t^{3-\alpha}}{(t-s)}dt + \dfrac{c}{\sqrt{5}s^{1-\alpha}(1-s)^\alpha}, \; 0 < s < 1$
- $g(s) = -\dfrac{s^2}{5} + \dfrac{d}{ds}\int_0^1 \dfrac{(1-t)^\alpha t^{3-\alpha}}{(t-s)}dt + \dfrac{c}{s^{1-\alpha}(1-s)^\alpha}, \; 0 < s < 1$
- $g(s) = -\dfrac{s^2}{5} + \dfrac{d}{ds}\int_0^1 \dfrac{(1-t)^\alpha t^{1-\alpha}}{(t-s)}dt + \dfrac{c}{\sqrt{5}s^{1-\alpha}(1-s)^\alpha}, \; 0 < s < 1$

No, the answer is incorrect.
Score: 0

Accepted Answers:

Google

$\frac{\pi}{t(t-u)}$

$\frac{\pi}{\sqrt{t(t-u)}}$

$\sqrt{\frac{\pi}{t(t-u)}}$

$\sqrt{\frac{\pi}{(t-u)}}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$\frac{\pi}{\sqrt{t(t-u)}}$

4) $The\ value\ of\ the\ integral\ \int_0^\infty \frac{\sin \pi x}{x(1-x^2)}\, dx\ is$ **1 point**

$\frac{\pi}{2}$

π

$\frac{\pi}{3}$

2π

No, the answer is incorrect.
Score: 0

Accepted Answers:
π

5) $\int_{1/2}^{1} \frac{du}{\sqrt{u-1/2}\sqrt{u-1/3}}\ is\ equal\ to$ **1 point**

$2\ln(\sqrt{2}+\sqrt{3})$

$\ln(\sqrt{3}+\sqrt{2})+\ln(2+\sqrt{3})$

$2\ln(2+\sqrt{3})$

$2\ln(3+\sqrt{2})$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$2\ln(2+\sqrt{3})$

6) $The\ integral\ I = \int_0^u \left(\frac{u-s}{s}\right)^{1/3} \frac{ds}{(u-s)(s-t)},\ when\ 0<t<u\ is\ equal\ to$ **1 point**

$\frac{\pi\sqrt{3}}{\left\{t(u-t)^2\right\}^{1/3}}$

$\frac{\pi}{\sqrt{3}\left\{t(u-t)^2\right\}^{1/3}}$

$\frac{\sqrt{3}}{\left\{t(u-t)^2\right\}^{1/3}}$

$\frac{\pi}{\sqrt{3}\{t(u-t)\}^{1/3}}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$\frac{\pi}{\sqrt{3}\left\{t(u-t)^2\right\}^{1/3}}$

7) **1 point**
$The\ function\ f:[-1,1]\to Q\ defined\ by\ f(x_1,x_2)=|2x_1-3x_2|\ is\ Lipschitz\ continuous\ with\ Lipschitz\ cc$

- 1
- 2
- 3
- 5

No, the answer is incorrect.
Score: 0

Accepted Answers:
3

8) $The\ function\ f(x)=x^{3/4},\ 0\le x<\infty\ is\ \alpha-Holder\ continuous\ if\ \alpha\ is\ equal\ to$ **1 point**

- 1
- 1/2
- 1/4
- 3/4

No, the answer is incorrect.
Score: 0

Accepted Answers:
3/4

9) $The\ function\ f(x)=x^{1/2},\ x\in[0,1]\ isHolder\ continuous\ where\ the\ exponent\ \alpha\ is\ equal\ to$ **1 point**

- 1
- 1/2
- 3/4
- 2/3

No, the answer is incorrect.
Score: 0

Accepted Answers:
1/2

10) $Let\ f\ be\ \alpha-Holder\ continuous\ on\ an\ interval\ I\subset\mathbb{R}\ with\ 0<\alpha\le 1\ then$ **1 point**

- $f\ is\ a\ constant\ function$
- $f\ is\ differentiable$
- $f\ is\ uniformly\ continuous$
- $none\ of\ these$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$f\ is\ uniformly\ continuous$

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