Unit 2 - Week-1

Assignment1

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

Due on 2018-08-15, 23:59 IST.

1) $Which\ one\ of\ the\ following\ is\ a\ solution\ of\ Volterra\ integral\ equation$ ***1 point***
$\int_0^x e^{x-t}u(t)dt = x$

- $\sqrt{x}$
- $1 - x$
- $1 + x$
- x

No, the answer is incorrect.
Score: 0

Accepted Answers:
$1 - x$

2) $The\ integral\ equation\ corresponding\ to\ the\ differential\ \ equation$ ***1 point***
$y''(x) - 3y'(x) + 2y(x) = 4\sin x;\ y(0) = 1,\ y'(0) = -2\ is$

- $y(x) = 1 + x - 4\sin x + \int_0^x (3 - 2(x-t))y(t)dt$
- $y(x) = 1 + x + 4\sin x + \int_0^x (3 - 2(x-t))y(t)dt$
- $y(x) = 1 - x - 4\sin x - \int_0 x(3 - 2(x-t))y(t)dt$
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Week 8

Week 9

Week 10

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$The\ integral\ equation\ corresponding\ to\ the\ differential\ equation$
$y''(x) + xy'(x) + y(x) = 0,\ y(0) = 1,\ y'(0) = 0\ is$

- $\phi(x) = 1 + \int_0^x (2x - t)\phi(t)dt$
- $\phi(x) = -1 + \int_0^x (t - 2x)\phi(t)dt$
- $\phi(x) = -1 - \int_0^x (t - 2x)\phi(t)dt$
- $\phi(x) = 1 - \int_0^x (t - 2x)\phi(t)dt$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$\phi(x) = -1 + \int_0^x (t - 2x)\phi(t)dt$

4) $The\ integral\ equation\ corresponding\ to\ the\ boundary\ value\ problem$ ***0 points***
$y''(x) + \lambda y(x) = 0,\ y(1) = 1,\ y(l) = 0\ is$

- $y(x) = \lambda \int_0^l K(x,t)y(t)dt\ where$
  $$K(x,t) = \begin{cases} \frac{t}{l}(l - x) & 0 < t < x \\ \frac{x}{l}(l - t) & x < t < l \end{cases}$$
- $y(x) = \lambda \int_0^l K(x,t)y(t)dt\ where$
  $$K(x,t) = \begin{cases} \frac{t}{l}(x - l) & 0 < t < x \\ \frac{x}{l}(l - t) & x < t < l \end{cases}$$
- $y(x) = \lambda \int_0^l K(x,t)y(t)dt\ where$
  $$K(x,t) = \begin{cases} \frac{t}{l}(x - l) & 0 < t < x \\ \frac{x}{l}(t - l) & x < t < l \end{cases}$$
- $y(x) = \lambda \int_0^l K(x,t)y(t)dt\ where$
  $$K(x,t) = \begin{cases} \frac{l}{t}(l - x) & 0 < t < x \\ \frac{l}{x}(l - t) & x < t < l \end{cases}$$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$y(x) = \lambda \int_0^l K(x,t)y(t)dt\ where$
$$K(x,t) = \begin{cases} \frac{t}{l}(l - x) & 0 < t < x \\ \frac{x}{l}(l - t) & x < t < l \end{cases}$$

5) $The\ integral\ equation\ corresponding\ to\ the\ boundary\ value\ problem$ ***0 points***
$y''(x) + xy(x) = 1,\ y(0) = 0,\ y(1) = 0\ is$

$y(x) = \frac{x(1+x)}{2} + \int_0^1 K(x,t)y(t)dt \ where$

$K(x,t) = \begin{cases} t^2(1-x) & t < x \\ xt(1-t) & x < t \end{cases}$

$y(x) = \frac{x(1-x)}{2} + \int_0^1 K(x,t)y(t)dt \ where$

$K(x,t) = \begin{cases} t^2(1-x) & t < x \\ xt(1-t) & x < t \end{cases}$

$y(x) = \frac{x(1+x)}{2} + \int_0^1 K(x,t)y(t)dt \ where$

$K(x,t) = \begin{cases} t^2(1+x) & t < x \\ xt(1+t) & x < t \end{cases}$

$y(x) = \frac{x(1+x)}{2} + \int_0^1 K(x,t)y(t)dt \ where$

$K(x,t) = \begin{cases} x^2(1-x) & t < x \\ xt(1-t) & x < t \end{cases}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$y(x) = \frac{x(1+x)}{2} + \int_0^1 K(x,t)y(t)dt \ where$

$K(x,t) = \begin{cases} t^2(1-x) & t < x \\ xt(1-t) & x < t \end{cases}$

6) *The initial value problem corresponding to the integral equation* **1 point**

$y(x) = \frac{x^2}{2} + \int_0^x t(t-x)y(t)dt$

$y''(x) + y(x) = 1, \ y(0) = y'(0) = 0$

$y''(x) + xy(x) = 1, \ y(0) = y'(0)) = 0$

$y''(x) + xy(x) = 1, \ y(0) = y'(0) = 1$

$y''(x) + xy(x) = 0, \ y(0) = y'(0) = 0\$$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$y''(x) + xy(x) = 1, \ y(0) = y'(0)) = 0$

7) *The boundary value problem corresponding to the integral equation* **1 point**

$y(x) = 1 + \int_0^x ty(t)dt + \int_x^1 xy(t)dt \ is$

$y'' + y = 0, \ y(0) = 1, y'(1) = 0$

$y'' + xy = 0, \ y(0) = 1, y'(1) = 0$

$y'' + y = 0, \ y(0) = 1 = y'(1)$

$y'' + y = 0, \ y(1) = y'(1) = 0$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$y'' + y = 0,\ y(0) = 1,\ y'(1) = 0$

8) $The\ solution\ of\ the\ integro - differential\ equation$ **1 point**
$\phi'(x) = \phi(x) - \int_0^x (x-t)\phi'(t)dt + \int_0^x \phi(t)dt + x,\ \phi(0) = -1\ is$

- $1 - 2e^x$
- $x - e^{-x}$
- $-e^{-x}$
- $-e^x$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$-e^x$

9) $The\ solution\ of\ the\ integro - differential\ equation$ **1 point**
$\phi''(x) + \int_0^x e^{2(x-t)}\phi'(t)dt = e^{2x},\ \phi(0) = \phi'(0) = 0\ is$

- $x(e^x - 1)$
- $xe^x - e^x + 1$
- $1 - e^x + x$
- $x^2 + e^x - x - 1$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$xe^x - e^x + 1$

10) $Which one of the functions is a solution of Volterra integral equation$ **1 point**
$\int_0^x (x-t)^2 u(t)dt = x^3$

- 1
- 3
- 2
- 1/3

No, the answer is incorrect.
Score: 0

Accepted Answers:
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