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## Unit 2 - Week 0 :

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## Course outline

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Assignment Solution

## Assignment 0

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

Due on 2019-02-04, 23:59 IST

1) If  $y = 1 + x + x^2 + \dots$ , then  $\frac{dy}{dx} = \underline{\hspace{2cm}}$ .

1 point

- a.  $-\frac{1}{(1-x)^2}$   
 b.  $\frac{1}{(1-x)^2}$   
 c.  $\frac{2}{(1-x)^2}$   
 d.  $-\frac{2}{(1-x)^2}$

- a.  
 b.  
 c.  
 d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

b.

2)

For the given relation  $\sqrt{1-x^2} + \sqrt{1-y^2} = p(x-y)$ , where  $p$  is a constant, the value of  $\frac{dy}{dx}$  at (0,0) is

1 point

- a. -1  
 b. 0  
 c. 1  
 d. -2

- a.  
 b.  
 c.  
 d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

c.

3)

1 point

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$$\int_1^2 \frac{\sqrt{1+x^2}}{x} dx = \underline{\hspace{2cm}}.$$

- a.  $\ln\left(\frac{1-\sqrt{2}}{1-\sqrt{5}}\right) + \ln 2 - \sqrt{2} + \sqrt{5}$   
 b.  $\ln\left(\frac{1+\sqrt{2}}{1+\sqrt{5}}\right) + \ln 2 - \sqrt{2} + \sqrt{5}$   
 c.  $\ln\left(\frac{1-\sqrt{2}}{1-\sqrt{5}}\right) + \ln 2 + \sqrt{2} + \sqrt{5}$   
 d.  $\ln\left(\frac{1+\sqrt{2}}{1+\sqrt{5}}\right) + \ln 2 + \sqrt{2} + \sqrt{5}$

- a.  
 b.  
 c.  
 d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

b.

- 4) Let the function  $f$  satisfies

1 point

$$f(x) + 2f\left(\frac{1}{x}\right) = x^2, x \neq 0$$

The value of the integral  $\int_1^2 x^2 f(x) dx$  is

- a.  $-\frac{7}{5}$   
 b.  $-\frac{7}{3}$   
 c.  $\frac{7}{5}$   
 d.  $\frac{7}{3}$

- a.  
 b.  
 c.  
 d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

a.

- 5)

1 point

The inverse of

$$\begin{bmatrix} 2 & 2 & 0 \\ -2 & 1 & 1 \\ 3 & 0 & 1 \end{bmatrix}$$

is

- a.  $\begin{bmatrix} 1/12 & 1/6 & 1/6 \\ 5/12 & 1/6 & -1/6 \\ -1/4 & 1/2 & 1/2 \end{bmatrix}$
- b.  $\begin{bmatrix} 1/12 & -1/6 & 1/6 \\ 5/12 & 1/6 & -1/6 \\ -1/4 & 1/2 & 1/2 \end{bmatrix}$
- c.  $\begin{bmatrix} 1/12 & -1/6 & 1/6 \\ 5/12 & 1/6 & -1/6 \\ 1/4 & 1/2 & 1/2 \end{bmatrix}$
- d.  $\begin{bmatrix} 1/12 & -1/6 & 1/6 \\ 5/12 & 1/6 & 1/6 \\ -1/4 & 1/2 & 1/2 \end{bmatrix}$

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

b.

6)

1 point

If  $x, y \in \mathbb{R}$ , then the determinant value of  $A = \begin{bmatrix} \cos x & -\sin x & 1 \\ \sin x & \cos x & 1 \\ \cos(x+y) & -\sin(x+y) & 0 \end{bmatrix}$  lies in the

interval

- a.  $[-\sqrt{2}, \sqrt{2}]$
- b.  $[-\sqrt{2}, 1]$
- c.  $[-1, 1]$
- d.  $[-\sqrt{2}, -1]$

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

a.

7)

1 point

The minimum and maximum of the function  $f(x) = x^3 - 6x^2 + 9x + 1, x \in [0, 5]$ , attain at  $x = \underline{\hspace{2cm}}$  respectively.

- a. -1 and 3
- b. 1 and 3
- c. 1 and -3
- d. -1 and -3

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

b.

8) Which of the following options hold(s) true for the function

$$f(x) = \begin{cases} x^2 \sin\left(\frac{1}{x}\right), & \text{if } x \neq 0 \\ 0, & \text{if } x = 0 \end{cases}$$

- a.  $\lim_{x \rightarrow 0} f(x) = 0$
- b.  $f$  is differentiable at  $x = 0$
- c.  $f$  is not differentiable at  $x = 0$
- d.  $f'$  is continuous at  $x = 0$

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

a.

b.

9) The order of the differential equation  $\left(\frac{d^2y}{dx^2}\right)^2 + \left(\frac{d^2y}{dx^2}\right)^4 + y^2 \sin x = 0$  is

- a. 2
- b. 3
- c. 4
- d. 6

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

b.

10)

Find the value(s) of  $y(1)$  by solving the differential equation  $y \frac{dy}{dx} = 6x^2 + 5$ ,  $y(0) = 2$ .

- a.  $\pm\sqrt{2}$
- b. 0
- c.  $\pm 3\sqrt{2}$
- d.  $\pm 3$

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

c.

End

