

MTH101 QUIZ NO 5 BY IQRA AZHAR

MTH101

Quiz no 5

2024

Last date : 18 Jan 2024

Solved by

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Dyne centimeters (dyne cm) is unit of work. Select the correct option

True

If an object moves in the positive direction over interval $[a,b]$, while subjected to a variable force $F(x)$ in the direction of motion, then the work done is Select the correct

$$W = \int_a^b F(x) dx$$

Arc length of the curve $y=x$ from $x=0$ to $x=1$ isSelect the correct option

$$L = \int_a^b \sqrt{1 + (f'(x))^2} dx$$

For the curve $y = x$, its derivative is $f'(x) = 1$. Substituting this into the formula:

$$L = \int_0^1 \sqrt{1 + 1^2} dx = \int_0^1 \sqrt{2} dx$$

The integral evaluates to $\sqrt{2} \cdot (x)$ evaluated from 0 to 1:

$$L = \sqrt{2} \cdot (1) - \sqrt{2} \cdot (0) = \sqrt{2}$$

Therefore, the correct option is:

$$\text{Arc length} = \sqrt{2}$$

Distance between the points $(-2,-3)$ and $(-4,-1)$ using the distance formula is.....

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be calculated using the distance formula.

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

In this case, the points are $(-2, -3)$ and $(-4, -1)$, so:

$$d = \sqrt{(-4 - (-2))^2 + (-1 - (-3))^2}$$

Simplifying further:

$$d = \sqrt{(-4 + 2)^2 + (-1 + 3)^2}$$

$$d = \sqrt{(-2)^2 + (2)^2}$$

$$d = \sqrt{4 + 4}$$

$$d = \sqrt{8}$$

A function is a function that has continuous derivatives up to some desired order over some domain.

smooth" function

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Question # 5 of 10 (Start time: 09:27:24 AM, 16 January 2024)

Question # 6 of 10 (Start time: 09:27:24 AM, 16 January 2024)

The Volume of a cylindrical shell is given by -----.

Select the correct option

- | | |
|----------------------------------|---|
| ☒ | $V = 2\pi (\text{average radius}).(\text{height}).(\text{thickness})$ |
| ☐ | $V = (\text{average radius}).(\text{height}).(\text{thickness})$ |

Question # 8 of 10 (Start time: 09:29:33 AM, 16 January 2024)

Arc length of the curve $y=1$ from $x=a$ to $x=b$ is

Select the correct option

- | | |
|----------------------------------|----------|
| ☒ | $b-a$ |
| ☐ | $2(b-a)$ |
| ☐ | 0 |
| ☐ | $a-b$ |

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MTH101 - Calculus And Analytical Geometry (Quiz No 5)

Question # 9 of 10 (Start time: 09:30:06 AM, 16 January 2024)

Mathematically second fundamental theorem of calculus can be written as,

Select the correct option

☐	$\frac{d}{dx} \int_a^t f(t) dt = f(x)$
☒	None of these
☐	$\frac{d}{dx} \int_a^t f(t) dt = f'(x)$
☐	$\frac{d}{dx} \int_a^t f(t) dt = f(t)$

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MTH101 - Calculus And Analytical Geometry (Quiz No 5)

Question # 10 of 10 (Start time: 09:31:36 AM, 16 January 2024)

$$\text{Evaluate } \frac{d}{dx} \int_2^x t dt$$

Select the correct option

☐	x^3
☒	None of these
☐	x
☐	x^2

Length of the arc $y=c$ from $x=0$ to $x=2$ is

2

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MTH101 - Calculus And Analytical Geometry (Quiz No 5)

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Question # 2 of 10 (Start time: 09:48:05 AM, 16 January 2024)

The Volume of a cylindrical shell can be expressed as

Select the correct option

☐ $V = (\text{area of cross section}) \cdot (\text{thickness})$

☒ $V = (\text{area of cross section}) \cdot (\text{height})$

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If the interval $[3,7]$ is divided into '4' equal subintervals, then left endpoint of each subinterval will be.....

Select the correct option

☐ 4,5,6,7

☐ 5,6,7,8

☒ 3,4,5,6

☐ 3,6,8,9

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Question # 5 of 10 (Start time: 09:51:02 AM, 16 January 2024)

Total Marks:

Definite integral indicating the arc length of the curve $y = x^2$ between $x = 0$ and $x = 2$ is

Select the correct option

 Reload Math Equations

☐	$L = \int_0^2 x dx$
☐	None of these.
☒	$L = \int_0^2 \sqrt{1 + 4x^3} dx$
☐	$L = \int_0^2 \sqrt{1 + 2x^3} dx$

Question # 6 of 10 (Start time: 09:52:11 AM, 16 January 2024)

Total Marks: 1

Arc length of the curve $y=1$ from $x=0$ to $x=1$ is.....

Select the correct option

☐	2
☐	0
☐	-1
☒	1

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MTH101 - Calculus And Analytical Geometry (Quiz No 5)

Quiz Start Time: 09:46 AM, 16 January 2024

Question # 8 of 10 (Start time: 09:54:18 AM, 16 January 2024)

Total Marks: 1

The value of $\int_1^2 dx = \underline{\hspace{2cm}}$.

Select the correct option

 Reload Math Equations

- | | |
|----------------------------------|---|
| ☐ | 0 |
| ☐ | 2 |
| ☒ | 1 |
| ☐ | 3 |

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MTH101 - Calculus And Analytical Geometry (Quiz No 5)

Quiz Start Time: 09:46 AM, 16 January 2024

Question # 1 of 10 (Start time: 09:46:56 AM, 16 January 2024)

If a flat surface of area A is submerged horizontally in fluid at a depth h then the fluid exerts a force F perpendicular to the surface this force F is defined as

Select the correct option

 Reload M

☐	$F = \frac{\rho h}{A}$
☒	$F = \rho h A$
☐	$F = \rho h$

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 **Allah Hafiz** 

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