

**MTH101 QUIZ 4 BY IQRA AZHAR**

# **MTH101** **Quiz 4** **2024**

Last date : 11 Jan 2024

*Solved by*

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..... is used to prove the first fundamental theorem of calculus.

## Mean value theorem of derivative

The volume of the sphere with radius  $r$  can be calculated by -----

$$V = \frac{4}{3}\pi r^3$$

The integral of  $f(x)=\sin(2x)$  from  $x=0$  to  $x=\pi$  is .....

$$-\frac{1}{2}\cos(2x)\Big|_0^\pi$$

Plug in the upper limit ( $\pi$ ) and subtract the result of plugging in the lower limit (0):

$$-\frac{1}{2}\cos(2\pi) - \left(-\frac{1}{2}\cos(2 \cdot 0)\right)$$

Since  $\cos(2\pi) = 1$  and  $\cos(0) = 1$ , the expression simplifies to:

$$-\frac{1}{2}(1) + \frac{1}{2}(1)$$

Combine the terms:

$$-\frac{1}{2} + \frac{1}{2} = 0$$

0

If the definite integral of  $f(x)=3$  over  $[1,x]$  is greater than '12' then ----

$$\int_1^x 3 \, dx > 12$$

Now, we can find the antiderivative of  $f(x) = 3$  with respect to  $x$ , which is  $3x$ . Apply the Fundamental Theorem of Calculus:

$$3x\Big|_1^x > 12$$

Plug in the upper limit ( $x$ ) and subtract the result of plugging in the lower limit (1):

$$3x - 3(1) > 12$$

Simplify the expression:

$$3x - 3 > 12$$

Add 3 to both sides:



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$x > 5$

If  $f$  is continuous at every point of  $[a, b]$  and  $F$  is anti-derivative of  $f$  on  $[a, b]$ , then Select the correct option

$\int_a^b f(x) dx = F(b) - F(a)$  none of  $f$  integral of ' $f(x)$ ' from  $[1, 2] = 5$ , and integral of ' $f(x)$ ' from  $[3, 2] = 4$ , then integral of ' $f(x)$ ' from  $[1, 3]$  is ..... these  $\int_a^b f(x) dx = F(b) - F(a)$

$$\int_a^b f(x) dx = F(b) - F(a)$$

The value of the  $\int_0^1 t^3 dt =$  \_\_\_\_\_.

$$\int_0^1 t^3 dt = \frac{1}{4} t^4 \Big|_0^1$$

Evaluate the expression at the upper limit (1) and subtract the result of plugging in the lower limit (0):

$$\frac{1}{4}(1)^4 - \frac{1}{4}(0)^4 = \frac{1}{4} - 0 = \frac{1}{4}$$

$$\text{Therefore, } \int_0^1 t^3 dt = \frac{1}{4}.$$

$\frac{1}{4}$

If integral of ' $f(x)$ ' from  $[1, 2] = 5$ , and integral of ' $f(x)$ ' from  $[3, 2] = 4$ , then integral of ' $f(x)$ ' from  $[1, 3]$  is .....

9

EVERY continuous function on an interval has an anti-derivative .....

On the interval

Derivative of  $f(x) = a - 7$ , where  $a$  is a constant is....

0

We will get a \_\_\_\_\_ by moving a 2d plane in a direction along a line perpendicular to the region.

Right cylinder

The integral of  $f(x) = \sin(x+1)$  from  $x=0$  to  $x=1$  is .....

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$$\cos(1) - \cos(2)$$

The conclusion of the 2nd fundamental theorem of calculus can be expressed in words as: "the derivative of an integral of a function is that....."

original function.

The integral of the sum of two functions is equal to the sum of their integrals.

true

The value of  $\int_1^x y^2 dy = \frac{1}{3}x^3 - \frac{1}{3}$ .

$$\frac{x^3}{3} - \frac{1}{3}$$

the volume of solid obtained when the region under the curve  $y=x^3$  over the interval  $[1,3]$  is revolved about the x-axis is Select the correct option

$$: V = \int_1^3 \pi x^6 dx.$$

If integral of  $f(x)$  from  $[-8,16] = 54$ , then integral of  $5f(x)$  from  $[-8,16] = \dots\dots\dots$

270

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Question # 8 of 10 ( Start time: 01:12:57 PM, 09 January 2024 )

Total Marks: 1

For any constant number c,

$$\int_a^b cf(x)dx =$$

which of the following is correct

Select the correct option

 Reload Math Equation

☒

$$c \int_a^b f(x)dx$$

☐

$$\int_a^b f(x)dx + c$$

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MTH101 - Calculus And Analytical Geometry (Quiz No 4)

Quiz Start Time: 01:05 PM, 09 January 2024

Question # 9 of 10 ( Start time: 01:13:33 PM, 09 January 2024 )

Total Marks: 1

Area of the region bounded by the curves  $y = x^2 + 2$ ,  $y = -x$ ;  $x = 0$  and  $x = 1$  is

Select the correct option

 Reload Math Equations

|                                  |                |
|----------------------------------|----------------|
| <input type="radio"/>            | $\frac{3}{16}$ |
| <input type="radio"/>            | None of these  |
| <input type="radio"/>            | $\frac{5}{16}$ |
| <input checked="" type="radio"/> | $\frac{17}{6}$ |

Click to Save Answer & Move to Next Question