MTH 202 TEST

Total points 20/20

MTH 202 TEST FOR STUDENTS OF FOUNTAIN UNIVERSITY OSOGBO

0 of 0 points

FULL NAME (SURNAME FIRST) *

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MATRIC NUMBER *

FUO/22/0353

Answer all the questions and ensure you submit once. For multiple submissions, only the first one will be considered.

20 of 20 points

✓ Which of the following is a homogeneous differential equation? * 1/1

- ○ dy/dx = (x^2 + y^2)/xy
- ○ dy/dx = x + y
- ◉ dy/dx = y/x ✓
- ○ dy/dx = x^2 + y

✓ What is the order of the equation d^2y/dx^2 + y = 0? * 1/1

- ○ 1
- ◉ 2 ✓
- ○ 3
- ○ 0

✓ What is the degree of the differential equation below? * 1/1

$$\left(\frac{d^2y}{dx^2}\right)^3+\left(\frac{dy}{dx}\right)^2+\sin\left(\frac{dy}{dx}\right)+1=0$$

- (●) 3 ✓
- ( ) 2
- ( ) 1
- ( ) Not defined

✓ What is the general solution of dy/dx = 2x? * 1/1

- (●) y = x^2 + C ✓
- ( ) y = 2x + C
- ( ) y = ln|x| + C
- ( ) y = e^x + C

✓ A second order differential equation involves: * 1/1

- ○ Only the first derivative
- ◉ Up to the second derivative ✓
- ○ The third derivative
- ○ No derivatives

✓ What is the integrating factor for the differential equation dy/dx + y = x? * 1/1

- ◉ e^x ✓
- ○ e^(-x)
- ○ x
- ○ ln(x)

✓ To find the particular solution of a differential equation, one needs: * 1/1

- ○ A general solution
- ◉ An initial or boundary condition ✓
- ○ A graph of the differential equation
- ○ The highest and lowest values of y

✓ The general solution of dy/dx = 0 is: * 1/1

- ◉ y = C ✓
- ○ y = x + C
- ○ y = x
- ○ y = 0

✓ Which method is used to solve dy/dx = y/x? * 1/1

- ○ Integrating Factor
- ◉ Separation of Variables ✓
- ○ Undetermined Coefficients
- ○ Laplace Transform

✓ If y = e^(mx) is a solution of the differential equation a d^2y/dx^2 + b dy/dx + cy = 0, then m satisfies: *1/1

- ◉ am^2 + bm + c = 0 ✓
- ○ am + b = 0
- ○ am^2 + c = 0
- ○ bm + c = 0

✓ The integrating factor of the differential equation dy/dx + Py = Q is: * 1/1

- (●) e^∫P dx ✓
- ( ) ∫P dx
- ( ) e^P
- ( ) 1/P

✓ A first-order, first-degree differential equation is solvable by the method of separable variables if it can be expressed in the form: *1/1

- ( ) y' + P(x)y = Q(x)
- (●) y' = P(y)Q(x) ✓
- ( ) y' = P(x)/Q(y)
- ( ) y' = y + x

✓ The differential equation whose solution is y = Ae^x + Be^-x is of order: * 1/1

- 1
- (●) 2 ✓
- 3
- 4

✓ Which of the following is a linear differential equation? * 1/1

- (●) dy/dx + y = sin(x) ✓
- dy/dx = y^2
- dy/dx = x*y
- dy/dx = x/y

✓ What is the condition for the differential equation Mdx + Ndy = 0 to be exact? *1/1

- ∂M/∂y=∂N/∂y
- ∂M/∂x=∂N/∂y
- ∂M/∂y=∂N/∂x ✓
- ∂M/∂x=∂N/∂x

✓ The general solution of d^2y/dx^2 = 9y is: * 1/1

- y = C1e^3x + C2e^-3x ✓
- y = C1cos(3x) + C2sin(3x)
- y = C1e^3x + C2x e^3x
- y = C1x^2 + C2x

✓ A differential equation of the form dy/dx = f(x) is called: * 1/1

- (●) Ordinary differential equation ✓
- ( ) Partial differential equation
- ( ) Total differential equation
- ( ) Integro-differential equation

✓ A differential equation is an equation that contains: * 1/1

- ( ) only derivatives
- (●) derivatives and algebraic terms ✓
- ( ) integral symbols
- ( ) only algebraic terms

✓ The solution of dy/dx = y/x with the condition y(1) = 1 is: * 1/1

- (●) y = x ✓
- ( ) y = x^2
- ( ) y = e^x
- ( ) y = ln(x)

✓ The linear differential equation of the first order is of the form: * 1/1

- (●) dy/dx + P(x)y = Q(x) ✓
- ( ) dy/dx = P(x) + y
- ( ) d^2y/dx^2 + P(x)y = Q(x)
- ( ) dy/dx = P(y) + x