Grand Quiz Spring 2021

Subject Code MTH 401 lecture 1 to 22

Solved By Riz Mughal

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I'm providing 100% correct quiz solution. You can visit my YouTube channel and get more information about all other subjects' quizzes and final year project (CS619).

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RIZ MUGHAL (SQA ENGINEER)

MTH401:Grand Quiz

Question # 1 of 30 (Start time: 09:05:30 AM, 01 July 2021)

The derivatives $u_1', u_2', \ldots, u_n'$ of the unknown functions $u_1, u_2, \ldots, u_n$ are find by using

Select the correct option

- (●) $u_n' = \frac{W_k}{W}, \quad k = 1, 2, \ldots, n$
- ( ) $u_n' = \frac{W}{W_k}, \quad k = 1, 2, \ldots, n$

MTH401:Grand Quiz

Quiz Start Time: 09:0

Question # 2 of 30 (Start time: 09:06:05 AM, 01 July 2021)

If

$$y = c_1 e^{(-2+\sqrt{6})x} + c_2 e^{(-2-\sqrt{6})x}$$

is the complementary solution of

$$y'' + 4y' - 2y = 2x^2 - 3x + 6$$

,then the general form of its particular solution is

$$y_p$$

Select the correct option

Reloa

●	$Ax^2 + Bx + C$
○	$Ax + B$
○	$Ax^3 + Bx^2 + Cx + D$

MTH401:Grand Quiz

Quiz Start Time: 09:05 AM, 01 July 20

Question # 3 of 30 (Start time: 09:06:21 AM, 01 July 2021)

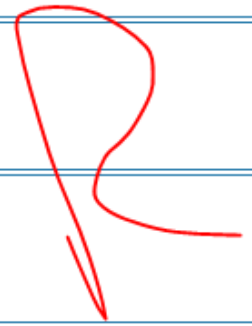
Total Marks

Consider the non - homogeneous linear differential equation, $a_n y^{(n)} + a_{n-1} y^{(n-1)} + \ldots + a_1 y' + a_0 y = g(x)$.
If the input function, $g(x) = (9x - 2)e^{5x}$, then the assumed particular solution y_p could be _____.

Select the correct option

Reload Math Equation

- Ae^{5x}
- $(Ax^2 + Bx + C)e^{5x}$
- $Ae^{5x}\cos 5x + Be^{5x}\sin 5x$
- $(Ax + B)e^{5x}$



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MTH401:Grand Quiz

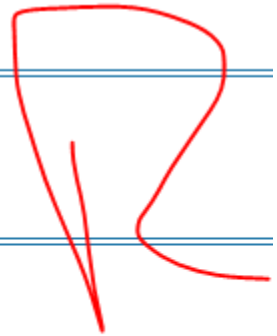
Quiz Start

Question # 4 of 30 (Start time: 09:06:37 AM, 01 July 2021)

If 3,3 are real roots of a differential equation, then the general solution is_____.

Select the correct option

- $y = c_1 e^{3x} + c_2 e^{3x}$
- $y = (c_1 + c_2 x) e^{3x}$
- $y = c_1 e^{3x} - c_2 e^{3x}$
- $y = c_1 e^{3x}$



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Question # 5 of 30 (Start time: 09:07:05 AM, 01 July 2021)

The gravitational force exerted by the earth on a body of mass m is called ---------- of the body.

Select the correct option

- ○ Force
- ● weight

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Quiz Start Time: 09:05 AM. (

Question # 6 of 30 (Start time: 09:07:23 AM. 01 July 2021)

For non - homogeneous differential equaitons, the form of the particular solution, $y_p = y_{p_1} + y_{p_2} + \ldots + y_{p}$ is a linear combination of all the linearly _____ functions generated by repeated differentiation of the input function $g(x)$.

Select the correct option

Reload Math

- dependent
- independent

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Quiz Start Time: 09:05 AM, 0

Question # 7 of 30 (Start time: 09:07:38 AM, 01 July 2021)

To

$$The\ differential\ equation\ \frac{dx}{dy} + \frac{1}{y}x = 2\sin y\ is\ first\ order\ linear\ in\ unknown\ ---$$

Select the correct option

Reload Math E

- (●) variable x
- ( ) variable y
- ( ) multi - variables x and y
- ( ) $\frac{dy}{dx}$

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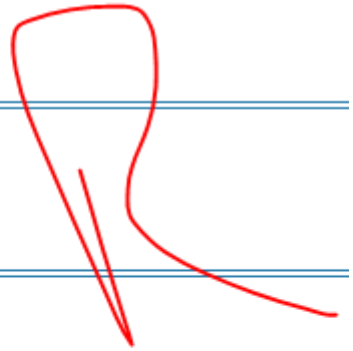
Question # 8 of 30 (Start time: 09:07:55 AM, 01 July 2021)

$\frac{d^3y}{dx^3} + y^2 = 0$ is a ------differential equation of degree----.

Select the correct option

- (●) non-linear, 1
- ( ) linear, 3
- ( ) non-linear, 3
- ( ) linear, 1



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Quiz Start Time: 0

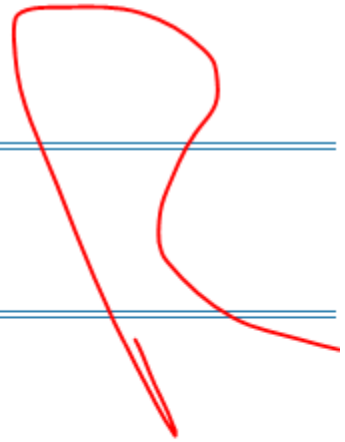
Question # 9 of 30 (Start time: 09:08:10 AM, 01 July 2021)

An annihilator operator L for the function, $f(x) = e^{3x}$, is $L =$ _____.

Select the correct option

Rel

- e^{3x}
- $D - 3$
- $D - e^{3x}$
- $3e^{3x}$



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Quiz Start Time: 09:05 AM, 0

Question # 10 of 30 (Start time: 09:08:43 AM, 01 July 2021)

Tc

The integrating factor for the first order linear differential equation : $\frac{dy}{dx} + y\tan x = \cos^2 x$ *is* $---$

Select the correct option

Reload Math

- e^{y^2}
- $\sec x$
- $e^{\tan x}$
- $e^{\sec x}$

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Quiz Start Time: 09:05 A

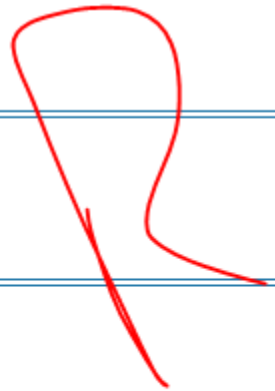
Question # 11 of 30 (Start time: 09:09:02 AM, 01 July 2021)

To reduce Bernoulli equation, $\frac{dy}{dx} - y = y^3$, into linear we put $v =$ _____.

Select the correct option

Reload Ma

- y^{-2}
- y^2
- y^{-1}
- y^{-3}



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Quiz Start Time: 09:05 AM, 01 July 202

Question # 12 of 30 (Start time: 09:09:18 AM, 01 July 2021)

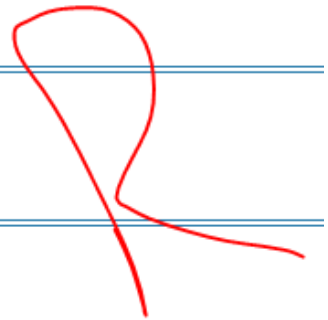
Total Marks

The root(s) of the auxiliary equation, $am^2 + bm + c = 0$, for the differential equation, $ay'' + by' + cy = 0$, is (are) _____.

Select the correct option

Reload Math Equations

- (III) $m_3 = \dfrac{b + \sqrt{b^2 + 4ac}}{2a}$
- (II) $m_2 = \dfrac{-b - \sqrt{b^2 - 4ac}}{2a}$
- (IV) Both (I) and (II).
- (I) $m_1 = \dfrac{-b + \sqrt{b^2 - 4ac}}{2a}$



MTH401:Grand Quiz

Quiz Start Time: 09

Question # 13 of 30 (Start time: 09:09:34 AM, 01 July 2021)

In a Bernoulli equation

$$\frac{dy}{dx} - \frac{1}{xy} = xy^3$$

identify

$$p(x), q(x) \& n$$

respectively.

Select the correct option

Reloa

- $-\frac{1}{x}, x\&3$
- $\frac{1}{x}, x\&3$
- $y, xy^3\&3$
- $-y, xy^3\&3$

MTH401:Grand Quiz

Quiz Start Time

Question # 14 of 30 (Start time: 09:09:50 AM, 01 July 2021)

The annihilator operator for the function, $g(x) = 2e^{-x}$, is _____.

Select the correct option

- D^2
- D
- $D + 5$
- $D + 1$

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Quiz Start Time: 09:

Question # 15 of 30 (Start time: 09:10:05 AM, 01 July 2021)

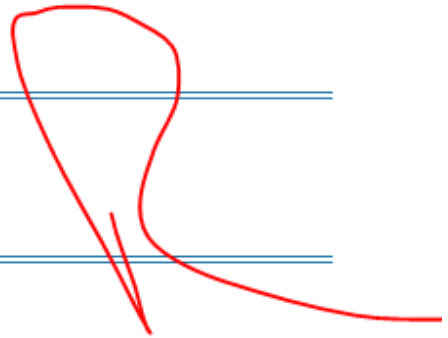
Which of the following is true about

$$f(x,y) = x^2 - y^2 + 3?$$

Select the correct option

Reloa

- $f(tx,ty) = tf(x,y)$
- $f(tx,ty) \neq t^2 f(x,y)$
- $f(tx,ty) = -t^2 f(x,y)$
- $f(tx,ty) = t^2 f(x,y)$



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Quiz Start Time: 09:05 AM, 01

Question # 16 of 30 (Start time: 09:10:20 AM, 01 July 2021)

Tota

The integrating factor for the first order linear differential equation : $\frac{dy}{dx} + y\cot x = \sin^2 x$ *is* $---$

Select the correct option

Reload Math Ec

- $\cos x$
- $e^{\cos x}$
- $e^{\sin x}$
- $\sin x$

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Quiz Start Time: 09:05 AM, 01 July 2021

Question # 17 of 30 (Start time: 09:10:37 AM, 01 July 2021)

Total Marks: 1

Which of the following substitution will transform the differential equation : $\frac{dy}{dx} = \frac{x+y+1}{x+y-1}$, *in to separable form?*

Select the correct option

Reload Math Equations

- (●) $z = x + y$
- ( ) $y = vx$
- ( ) $x = vy$
- ( ) $x = X + h, y = Y + k$

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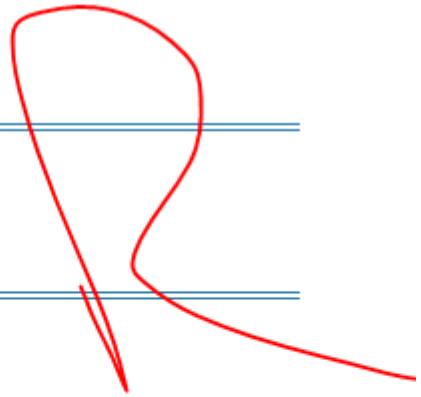
Quiz S

Question # 18 of 30 (Start time: 09:10:52 AM, 01 July 2021)

In the population growth model, the solution of the differential equation is given by _____.

Select the correct option

- $A(t) = A_0/2$
- $A(t) = A_0 e^{kt}$
- $A(t) = A_0/2$
- $A(t) = ke^{kt}$



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Question # 19 of 30 (Start time: 09:11:07 AM, 01 July 2021)

If

$$y = 2 + x$$

, then which of the following is true for it?

Select the correct option

○	Its annihilator operator is D^3
○	Its annihilator operator is D
●	Its annihilator operator is D^2
○	Its annihilator operator is D+1

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Quiz Start Time

Question # 20 of 30 (Start time: 09:11:23 AM, 01 July 2021)

What is annihilator operator of the function

$$g(x) = 8e^{3x}$$

?

Select the correct option

R

- ○ $(D+3)$
- ○ $(D-3)^2$
- ○ $(D+3)^2$
- ● $(D-3)$

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Quiz Start Time: 09:05 AM, 01 July 20

Question # 21 of 30 (Start time: 09:11:38 AM, 01 July 2021)

Total Marks

$If\ the\ non-exact\ differential\ equation\ M(x,y)dx+N(x,y)dy=0 is\ homogeneous\ and\ xM(x,y)+yN(x,y)\neq 0, then\ the\ integrating\ factor\ is---$

Select the correct option

Reload Math Equation

- $\frac{1}{xM+yN}, xM+yN\neq 0$
- $\frac{\frac{\partial M}{\partial y}-\frac{\partial N}{\partial x}}{N}$
- $\frac{\frac{\partial N}{\partial x}-\frac{\partial M}{\partial y}}{M}$
- $\frac{1}{xM-yN}, xM-yN\neq 0$

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Quiz Start Time: 09:05 AM, 01 July 202

Question # 22 of 30 (Start time: 09:12:11 AM, 01 July 2021)

Total Marks:

The superposition principle is a property of linear differential equations and it does not hold in case of _____ differential equations.

Select the correct option

- linear
- nonlinear

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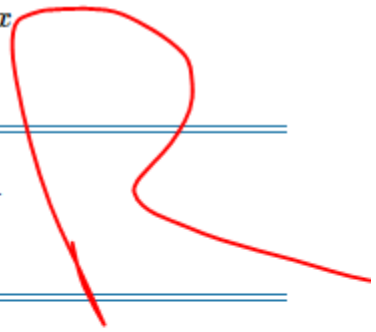
Question # 23 of 30 (Start time: 09:12:27 AM, 01 July 2021)

Wronskian, $W(x, -3x) =$ _____.

Select the correct option

- $3x$
- 1
- $-3x$
- 0



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Quiz Start Time: 09:05 AM, 01 July 202

Question # 24 of 30 (Start time: 09:12:41 AM, 01 July 2021) **Total Marks:**

The combination of the Newton's second law and the Hook's law could lead to a differential equation governing to the motion of a mass attached to spring i.e. _____ motion.

Select the correct option

- ○ rotational
- ○ translational
- ○ linear
- ● simple harmonic

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Question # 25 of 30 (Start time: 09:13:04 AM, 01 July 2021)

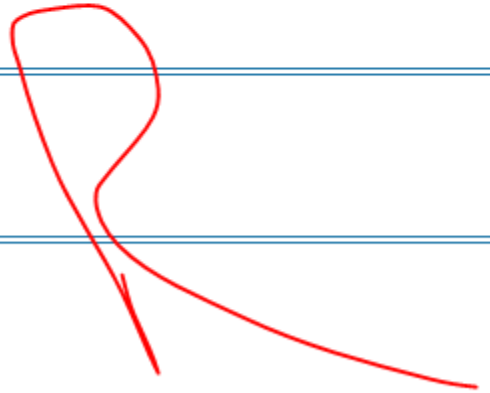
The differential equation

$$y(1+2xy)dx + x(1-2xy)dy = 0$$

is

Select the correct option

- Separable
- None of these
- Homogeneous
- Exact



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Quiz Start Time: 09:05 AM,

Question # 26 of 30 (Start time: 09:13:21 AM, 01 July 2021)

Which of the following is first order linear equation in unknown variable x?

Select the correct option

Reload Math

- $y\frac{dx}{dy} + (\sin x)\, x = \cos y$
- $x\frac{dy}{dx} + (\sin x)\, y = \cos x$
- $y\frac{dx}{dy} + (\sin y)\, x = \cos y$
- $y\frac{dx}{dy} + (\sin y)\, x = \cos x$

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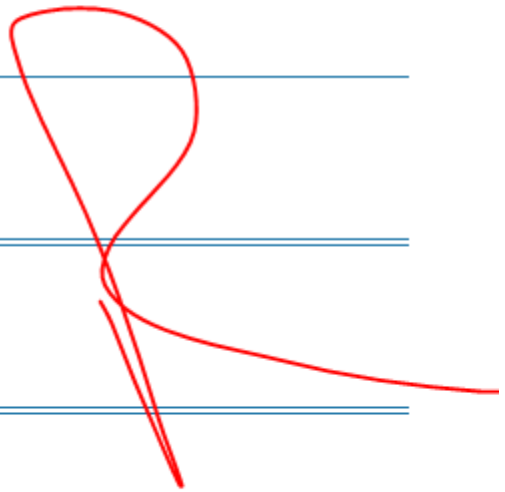
Question # 27 of 30 (Start time: 09:13:36 AM, 01 July 2021)

General solution of the separable differential equation: $\frac{\sec^2 y}{\tan y}dy = dx$ is-----.

Select the correct option

- $y = \tan^{-1}(c + e^x)$
- $y = \cot(c + e^x)$
- $y = \tan^{-1}(ce^x)$
- $y = \cot(ce^x)$



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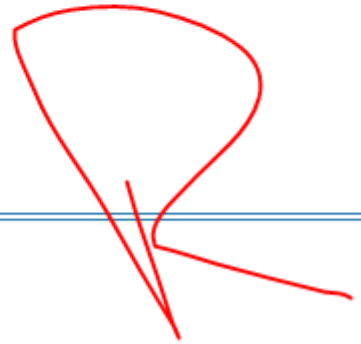
Quiz Star

Question # 28 of 30 (Start time: 09:13:50 AM, 01 July 2021)

If the auxiliary equation $m^3 + m = 0$ has roots $m = 0, m = \pm i$ then the complementary function is

Select the correct option

- (●) $y_c = c_1 + c_2 \cos x + c_3 \sin x$
- ( ) $y_c = c_1 \cos x + c_2 \sin x$



MTH401:Grand Quiz

Quiz Start Time: 09:05 AM, 01 July 2021

Question # 29 of 30 (Start time: 09:14:06 AM, 01 July 2021)

Total Marks:

Which of the following substitution will transform the differential equation : $\frac{dy}{dx} = \frac{x+y+1}{x+2y+1}$, *in to separable form?*

Select the correct option

Reload Math Equations

- $y = v + x$
- $y = vx$
- $x = vy$
- $x = X + h, y = Y + k$

MTH401:Grand Quiz

Quiz Start Time: 09:05 AM, 01 July 202

Question # 30 of 30 (Start time: 09:14:34 AM, 01 July 2021)

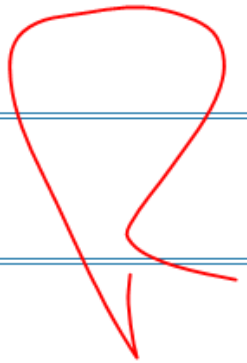
Total Marks:

Which of following is the integrating factor for the 1^{st} *order linear differential equation :* $\frac{dy}{dx} + y = f(x)$

Select the correct option

Reload Math Equations

- ○ $\frac{1}{x}$
- ● e^x
- ○ x
- ○ $\ln x$



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