

RIZ MUGHAL

QUIZ MASTER

Grand Quiz(MTH401)

100% correct solution.

For more information you can visit my channel and for any type of help related to CS619 you can contact me.



YOUTUBE CHANNEL:

<https://www.youtube.com/channel/UCINsFwDiB62SValCcPDZbRQ/playlists>

FACEBOOK GROUP:

<https://www.facebook.com/groups/923887914750307>

Question # 1 of 30 (Start time: 09:45:25 AM, 03 January 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

- | | |
|----------------------------------|-----------------|
| <input checked="" type="radio"/> | simple harmonic |
| <input type="radio"/> | linear |
| <input type="radio"/> | rotational |
| <input type="radio"/> | translational |

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Question # 2 of 30 (Start time: 09:45:44 AM, 03 January 2021)

$\frac{d^3y}{dx^3} + y^4 = 0$ is a -----differential equation of order----.

Select the correct option

<input type="radio"/>	linear, 4
<input type="radio"/>	linear, 3
<input type="radio"/>	non-linear, 4
<input checked="" type="radio"/>	non-linear, 3

Question # 3 of 30 (Start time: 09:45:59 AM, 03 January 2021)

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

Select the correct option

[Reload](#)

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



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



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



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

Question # 4 of 30 (Start time: 09:46:34 AM, 03 January 2021)

Total Marks

Consider the non - homogeneous linear differential equation, $a_n y^{(n)} + a_{n-1} y^{(n-1)} + \dots + a_1 y' + a_0 y = g(x)$.
If the input function, $g(x) = 3x^2 - 2$, then the assumed particular solution y_p could be _____.

Select the correct option

[Reload Math Equation](#)

<input type="radio"/>	
<input type="radio"/>	$Ax + B$
<input checked="" type="radio"/>	$Ax^2 + Bx + C$
<input type="radio"/>	$Ax^3 + Bx^2 + Cx + D$

Question # 5 of 30 (Start time: 09:46:49 AM, 03 January 2021)

In exponential model for the population growth

$$P(t) = P_0 e^{kt} \quad \text{If } k < 0, \text{ then } \lim_{t \rightarrow \infty} P(t) =$$

Select the correct option

<input checked="" type="radio"/>	0
<input type="radio"/>	1
<input type="radio"/>	∞
<input type="radio"/>	$-\infty$

Question # 6 of 30 (Start time: 09:47:10 AM, 03 January 2021)

Which of following would be a constant solution of the separable differential equation: $\frac{dy}{dx} = e^{x+y}$?

Select the correct option

<input type="radio"/>	$y = 0$
<input type="radio"/>	$y = 1$
<input type="radio"/>	$y = a \in \mathbb{R}$
<input checked="" type="checkbox"/>	No constant solution exist

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Question # 7 of 30 (Start time: 09:47:26 AM, 03 January 2021)

Which of following are explicit solutions of the differential equation: $\frac{dy}{dx} = -\frac{x}{y}$.

Select the correct option

<input type="radio"/>	$y = \pm\sqrt{4+x}$
<input type="radio"/>	$y = \pm\sqrt{-4+x^2}$
<input checked="" type="radio"/>	$y = \pm\sqrt{4-x^2}$
<input type="radio"/>	$y = \pm\sqrt{-4-x^2}$

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Question # 8 of 30 (Start time: 09:47:43 AM, 03 January 2021)

Which of the following would be a particular solution of the differential equation: $\frac{dy}{dx} = 4$?

Select the correct option

- | | |
|----------------------------------|--------------|
| <input type="radio"/> | $y = 4x + a$ |
| <input type="radio"/> | $y = ax + 4$ |
| <input type="radio"/> | $y = ax + 4$ |
| <input checked="" type="radio"/> | $y = 4x + 4$ |

Question # 9 of 30 (Start time: 09:48:00 AM, 03 January 2021)

The family of parabolas $y^2 = 4ax$ are solutions of the differential equation: $\frac{dy}{dx} = \frac{2a}{y}$ for ----- value(s) of a .

Select the correct option

[Reloa](#)

<input checked="" type="radio"/>	infinite
<input type="radio"/>	finite
<input type="radio"/>	unique
<input type="radio"/>	no

Question # 10 of 30 (Start time: 09:48:17 AM, 03 January 2021)

The order and degree of the differential equation: $x = 1 + \frac{dy}{dx} + \frac{1}{2!} \left(\frac{dy}{dx} \right)^2 + \frac{1}{3!} \left(\frac{dy}{dx} \right)^3 + \dots$ (Hint: Apply $1 + t + \frac{t^2}{2!} + \frac{t^3}{3!} + \dots = e^t$)

Select the correct option

[Reload Mat](#)

- | | |
|----------------------------------|-------------------------------------|
| <input checked="" type="radio"/> | both are one. |
| <input type="radio"/> | are one and undefined respectively. |
| <input type="radio"/> | are undefined and one respectively. |
| <input type="radio"/> | both are undefined. |

[Click to Save Answer & Move to Next](#)

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Question # 11 of 30 (Start time: 09:48:41 AM, 03 January 2021)

Which of the following function would satisfy: $\frac{dy}{dx} = \frac{d^2y}{dx^2} = \dots = \frac{d^ny}{dx^n}$?

Select the correct option

<input checked="" type="radio"/>	$y = Ae^x$
<input type="radio"/>	$y = Axe^x$
<input type="radio"/>	$y = Ae^{x^n}$
<input type="radio"/>	$y = Ax^n e^{x^n}$

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Question # 12 of 30 (Start time: 09:48:55 AM, 03 January 2021)

If $x^2y^3 dx + x^3y^2 dy = 0$ has the equivalent form as $d\left(\frac{1}{3}x^3y^3\right) = 0$, then its solution is –

Select the correct option

[Reload Mat](#)

<input type="radio"/>	$x^3 + y^3 = c$
<input type="radio"/>	$x^3 - y^3 = c$
<input checked="" type="radio"/>	$x^3y^3 = c$
<input type="radio"/>	$\frac{x^3}{y^3} = c$

Question # 13 of 30 (Start time: 09:49:16 AM, 03 January 2021)

Total Marks: 10

Consider the non - homogeneous linear differential equation, $a_n y^{(n)} + a_{n-1} y^{(n-1)} + \dots + a_1 y' + a_0 y = g(x)$.
If the input function, $g(x) = \cos 4x$, then the assumed particular solution y_p could be _____.

Select the correct option

[Reload Math Equation](#)

- | | |
|----------------------------------|------------------------------|
| <input type="radio"/> | Ae^{4x} |
| <input type="radio"/> | $Ax^2 + Bx + C$ |
| <input checked="" type="radio"/> | $A \cos 4x + B \sin 4x$ |
| <input type="radio"/> | $(A + B)(\cos 4x + \sin 4x)$ |

Question # 14 of 30 (Start time: 09:49:36 AM, 03 January 2021)

Total M

If $A(t)$ is the amount of a radioactive substance present at time t , the the rate of change of $A(t)$ with respect to t is given by _____.

Select the correct option

[Reload Math Equat](#)

- | | |
|----------------------------------|---|
| <input type="radio"/> | $dA = dt$ |
| <input type="radio"/> | $A_0 e^t$ |
| <input type="radio"/> | $\frac{A_0}{2}$ |
| <input checked="" type="radio"/> | $\frac{dA}{dt} = kA$; k is a constant of proportionality |

Question # 15 of 30 (Start time: 09:49:53 AM, 03 January 2021)

Total

If the general solution of a separable differential equation is $\sin^{-1} y = \cos^{-1} x + c$, provided that $y(\frac{1}{\sqrt{2}}) = \frac{1}{\sqrt{2}}$, then $c = \text{---}$.

Select the correct option

[Reload Math Equ](#)

- | | |
|----------------------------------|------------------|
| <input type="radio"/> | $\frac{\pi}{2}$ |
| <input type="radio"/> | $\frac{\pi}{4}$ |
| <input type="radio"/> | $-\frac{\pi}{2}$ |
| <input checked="" type="radio"/> | 0 |

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Question # 16 of 30 (Start time: 09:50:09 AM, 03 January 2021)

For $f(x, y) = \frac{2x}{3y} + 7$, $f(tx, ty) = \dots$

Select the correct option

<input checked="" type="radio"/>	$f(x, y)$
<input type="radio"/>	$tf(x, y)$
<input type="radio"/>	$t^2f(x, y)$
<input type="radio"/>	$t^3f(x, y)$

Question # 17 of 30 (Start time: 09:50:24 AM, 03 January 2021)

Total M

If $d\left(\frac{x^2}{y}\right) = 0$ is an equivalent form of the exact differential equation : $2xydx - x^2dy = 0$, then its solution is -

Select the correct option

[Reload Math Equa](#)

- | | |
|----------------------------------|------------|
| <input type="radio"/> | $y = cx$ |
| <input type="radio"/> | $x = cy$ |
| <input type="radio"/> | $x^2 = cy$ |
| <input checked="" type="radio"/> | $y = cx^2$ |

Question # 18 of 30 (Start time: 09:50:45 AM, 03 January 2021)

Total Marks: 1

If a force acts upon a body, the acceleration is produced in the direction of the force whose magnitude is proportional to the magnitude of force, is known as the _____.

Select the correct option

- | | | |
|----------------------------------|---------------------|----|
| <input type="radio"/> | Hook's law | // |
| <input type="radio"/> | Newton's first law | // |
| <input checked="" type="radio"/> | Newton's second law | // |
| <input type="radio"/> | Newton's third law | // |

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Question # 19 of 30 (Start time: 09:51:01 AM, 03 January 2021)

What is annihilator operator of the function

$$g(x) = 4 \sin x$$

?

Select the correct option

- | | |
|----------------------------------|-------------|
| <input type="radio"/> | $(D^2 - 1)$ |
| <input type="radio"/> | $(D^2 + 4)$ |
| <input type="radio"/> | $(D^2 - 4)$ |
| <input checked="" type="radio"/> | $(D^2 + 1)$ |

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Question # 20 of 30 (Start time: 09:51:18 AM, 03 January 2021)

What is annihilator operator of the function

$$g(x) = x^4 + 5$$

?

Select the correct option

<input type="radio"/>	(D-4)
<input type="radio"/>	(D+4)
<input checked="" type="radio"/>	D^5
<input type="radio"/>	$(D + 5)^4$

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Question # 21 of 30 (Start time: 09:51:36 AM, 03 January 2021)

Tot

For the nonexact differential equation

$$y(xy + 2x^2y^2) dx + x(xy - x^2y^2) dy = 0, \text{ if } xM(x, y) - yN(x, y) = x^3y^3 \neq 0,$$

then the integrating factor is ---

Select the correct option

[Reload Math E](#)

- | | |
|----------------------------------|---------------------|
| <input type="radio"/> | $e^{x^3y^3}$ |
| <input type="radio"/> | $e^{-x^3y^3}$ |
| <input checked="" type="radio"/> | $\frac{1}{x^3y^3}$ |
| <input type="radio"/> | $\frac{-1}{x^3y^3}$ |

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Question # 22 of 30 (Start time: 09:51:51 AM, 03 January 2021)

The differential equation: $\sqrt[3]{\left(\frac{d^2y}{dx^2}\right)^2} = \sqrt{1 + \left(\frac{dy}{dx}\right)^2}$ has

Select the correct option

<input checked="" type="radio"/>	order 2 and degree 4
<input type="radio"/>	order 4 and degree 2
<input type="radio"/>	both order and degree equal 2
<input type="radio"/>	both order and degree equal 4

Question # 23 of 30 (Start time: 09:52:06 AM, 03 January 2021)

Total Marks

A function satisfying the differential equation on the some interval I , containing a and b , whose graph passes through two points (a, y_0) and (b, y_1) is called solution of the _____ value problem.

Select the correct option

[Reload Math Equation](#)

initial



boundary

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Question # 24 of 30 (Start time: 09:52:23 AM, 03 January 2021)

Which of the following is a constant solution of separable differential equation: $\frac{dy}{dx} = (x + \sqrt{x})(y + \sqrt{y})$?

Select the correct option

[Reload Mat](#)

- | | |
|----------------------------------|--|
| <input checked="" type="radio"/> | $y = 0$ |
| <input type="radio"/> | $y = 1$ |
| <input type="radio"/> | $y = 0, 1$ |
| <input type="radio"/> | $y = i \in \mathbb{C} = \text{Set of Complex numbers}$ |

Question # 25 of 30 (Start time: 09:52:41 AM, 03 January 2021)

Tot

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

Select the correct option

[Reload Math Ed](#)

- | | |
|----------------------------------|------------------------|
| <input type="radio"/> | $x = X + h, y = Y + k$ |
| <input type="radio"/> | $x = vy$ |
| <input type="radio"/> | $y = vx$ |
| <input checked="" type="radio"/> | $z = x + y$ |

[Click to Save Answer & Move to Next Qu](#)

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Question # 26 of 30 (Start time: 09:52:57 AM, 03 January 2021)

The hook's law states that the force F is proportional to the _____.

Select the correct option

<input type="radio"/>	Length
<input checked="" type="radio"/>	Elongation
<input type="radio"/>	Weight
<input type="radio"/>	None of these

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Question # 27 of 30 (Start time: 09:53:11 AM, 03 January 2021)

Wronskian of 1 and x^2 , $W(1, x^2) =$ _____

Select the correct option

<input type="radio"/>	0
<input checked="" type="radio"/>	2x
<input type="radio"/>	x
<input type="radio"/>	None of these

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Question # 28 of 30 (Start time: 09:53:28 AM, 03 January 2021)

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

Select the correct option

<input type="radio"/>	Force
<input checked="" type="radio"/>	weight

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Question # 29 of 30 (Start time: 09:53:56 AM, 03 January 2021)

Which of following is an implicit solution of the differential equation: $\frac{dy}{dx} = -\frac{x}{y}$.

Select the correct option

- | | |
|----------------------------------|---------------------|
| <input type="radio"/> | $x + y + 4 = 0$ |
| <input checked="" type="radio"/> | $x^2 + y^2 - 4 = 0$ |
| <input type="radio"/> | $x^2 - y^2 + 4 = 0$ |
| <input type="radio"/> | $x^2 - y^2 - 4 = 0$ |

Question # 30 of 30 (Start time: 09:54:12 AM, 03 January 2021)

Total Marks:

A function satisfying the differential equation on the interval I whose graph passes through (x_0, y_0) such that the slope of the curve at the point is the number y'_0 is called solution of the _____ value problem.

Select the correct option

[Reload Math Equations](#)

<input checked="" type="radio"/>	initial
<input type="radio"/>	boundary

[Click to Save Answer & Move to Next Question](#)