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CORRECT ANSWER SOLVED BY HADI
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WARNING: Team HADI is not responsible for any mistake or wrong answer. All students reading and using this document may check and confirm the answers at their own.



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Best of luck!



Question No : 1 of 26

Marks: 1 (Budgeted Time 1 Min)

A solution obtained by giving particular values to the arbitrary constants in the General Solution of a differential equation is called a -----

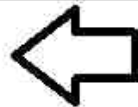
Answer (Please select your correct option)

☐ Singular solution

☒ Particular solution

☐ Explicit Solution

☐ None of these



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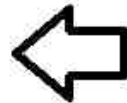
Question No : 2 of 26

Marks: 1 (Budgeted Time 1 Min)

The equation $\frac{dy}{dx} = \frac{x(x+1)}{y(y-1)}$ is a/an -----

Answer (Please select your correct option)

☐ partial differential equation.



i think this ...because
in partial all value
write up and down ,,,

☐ ordinary differential equation.

☐ polynomial equation.

☐ transcendental equation.

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Question No : 3 of 26

Marks: 1 (Budgeted Time 1 Min)

A differential equation $M(x, y) dx + N(x, y) dy = 0$ is said to be non-exact if -----

Answer (Please select your correct option)

☐ $\frac{\partial M}{\partial y} \neq \frac{\partial N}{\partial x}$

☐ $\frac{\partial M}{\partial y} = \frac{\partial N}{\partial y}$

☐ $\frac{\partial M}{\partial x} = \frac{\partial N}{\partial y}$

☐ $\frac{\partial M}{\partial y} = \frac{\partial N}{\partial x}$

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Question No : 4 of 26

Marks: 1 (Budgeted Time 1 Min)

For a 1st order linear differential equation $\frac{dy}{dt} - \frac{1}{t}y = 2t^2$, the integrating factor will be -----:

Answer (Please select your correct option)

☐ $\mu = -\frac{1}{t}$

☒ $\mu = \frac{1}{t}$



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☐ $\mu = t$

☐ $\mu = 2t$

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Question No : 5 of 26

Marks: 1 (Budgeted Time 1 Min)

In order to change the Bernoulli Equation

$$\frac{dy}{dx} + p(x)y = q(x)y^n$$

into linear differential equation, we choose -----

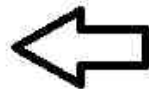
Answer (Please select your correct option)

☐ $v = y^{n-1}$

☒ $v = y^{1-n}$

☐ $v = y^n$

☐ $v = y'$



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Question No : 6 of 26

Marks: 1 (Budgeted Time 1 Min)

The differential equation $\frac{dy}{dx} = \frac{x+2y-4}{2x+y-5}$ is not homogeneous. To convert it into homogeneous form, we use the substitution-----.

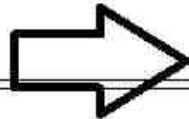
Answer (Please select your correct option)

☐ $x = hX$

☐ $y = kY$

☐ $z = x + 2y$

☐ $x = X + h, y = Y + k$



correct answer solve
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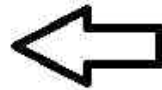
Question No : 7 of 26

Marks: 1 (Budgeted Time 1 Min)

Number of constant solutions obtained from the separable differential equation $\frac{dy}{dx} = \frac{y^3 - 1}{x}$ is---

Answer (Please select your correct option)

☐ 0



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☐ 1

☐ 2

☐ 3

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Question No : 8 of 26

Marks: 1 (Budgeted Time 1 Min)

In the 1st order linear differential equation, $\frac{dy}{dx} + \frac{y}{\ln x} = x^2$ find $p(x)$.

Answer (Please select your correct option)

☐ $\frac{y}{\ln x}$

☐ $\frac{1}{\ln x}$

☐ x^2

☐ $\frac{x^2}{\ln x}$

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Question No : 9 of 26

Marks: 1 (Budgeted Time 1 Min)

For a 1st order linear differential equation $\frac{dy}{dx} + y = x$, the integrating factor $\mu(x)$ is---

Answer (Please select your correct option)

☐ x

☒ 1

☐ e^x

☐ e



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Question No : 10 of 26

Marks: 1 (Budgeted Time 1 Min)

In exponential model for the population growth $P(t) = P_0 e^{kt}$ If $k < 0$, then $\lim_{t \rightarrow \infty} P(t) = \dots$

Answer (Please select your correct option)

☐ ∞

☐ 0

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☐ $-\infty$

☐ 1

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Question No : 11 of 26

Marks: 1 (Budgeted Time 1 Min)

What is other name of Logistic Model?

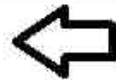
Answer (Please select your correct option)

☐ Epidemic Model

☐ Euler Model

☒ Verhulst Pearl Model

☐ Gussain Model



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Question No : 12 of 26

Marks: 1 (Budgeted Time 1 Min)

Wronskian of $\sin x, \cos x$ is----

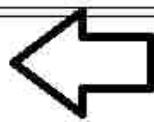
Answer (Please select your correct option)

☐ $\sin x$

☐ 1

☒ -1

☐ $\cos x$



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Question No : 13 of 26

Marks: 1 (Budgeted Time 1 Min)

What is annihilator operator of the function $\frac{dy}{dx} + 4y = e^{2x}$?

Answer (Please select your correct option)

☐ $(D+4)(D-2)$

☐ $(D-2)$

☐ $(D+2)$

☐ $D(D^2-2)$



correct answer solve
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What is the annihilator operator of the function $g(x) = \cos 2x$?

Answer (Please select your correct option)

☐ $(D-4)$

☐ $(D+4)$

☐ (D^2+4)



i think this

☐ (D^3-4)

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Question No : 15 of 26

Marks: 1 (Budgeted Time 1 Min)

The differential equation of the orthogonal trajectory to the family of curves $y = cx$ is-----.

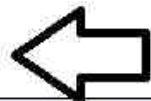
Answer (Please select your correct option)

☐ $\frac{dy}{dx} = -\frac{x}{y}$

☐ $\frac{dy}{dx} = \frac{x}{y}$

☐ $\frac{dy}{dx} = -\frac{y}{x}$

☐ $\frac{dy}{dx} = \frac{y}{x}$



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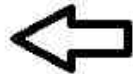
Question No : 16 of 26

Marks: 1 (Budgeted Time 1 Min)

If T denotes the half life and the initial amount of the substance be A_0 , then the amount of radioactive substance at time T is given by-----

Answer (Please select your correct option)

☐ $A(T) = \frac{A_0}{2}$



correct answer solve
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☐ $A(T) = \frac{T}{2}$

☐ $A(T) = A_0$

☐ $A(T) = \frac{kT}{2}$

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Question No : 17 of 26

Marks: 1 (Budgeted Time 1 Min)

If the auxiliary equation has complex roots $\pm i$, then the general solution of the differential equation is _____.

Answer (Please select your correct option)

☐

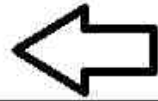
$$y = c_1 \cos x + c_2 \sin x$$

☐

$$y = ce^{2x} (\cos x + \sin x)$$

☐

$$y = e^{ix} (c_1 \cos x + c_2 \sin x)$$



correct answer solve
by hadi...but check it

☐

$$y = e^x (c_1 \cos x - c_2 \sin x)$$

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If the complementary solution of $\frac{d^2 y}{dx^2} - 5 \frac{dy}{dx} + 6y = 4e^{2x}$ is $c_1 e^{2x} + c_2 e^{3x}$, then which of the following is the most accurate option for it?

Answer (Please select your correct option)

☐ The general form of the particular solution will be Ae^{3x} .

☐ The general form of the particular solution will be Ae^x .

☐ The general form of the particular solution will be Ae^{2x} .

☐ The general form of the particular solution will be Axe^{2x} .

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If $c_1 e^x$ and $c_2 x e^x$ are the solutions of $\frac{d^2 y}{dx^2} - 2 \frac{dy}{dx} + y = 0$, then which of the following is the most accurate option for $\frac{d^2 y}{dx^2} - 2 \frac{dy}{dx} + y = e^x$?

Answer (Please select your correct option)

- ☐ Its general form of the particular solution will be Ae^x .
- ☐ Its general form of the particular solution will be Axe^x .
- ☐ Its general form of the particular solution will be Ax^2e^x .
- ☐ Its general form of the particular solution will be Ax^3e^x .

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If $e^{2x}(c_1 \cos 3x + c_2 \sin 3x)$ is the solution of $\frac{d^2 y}{dx^2} - 4 \frac{dy}{dx} + 13y = 0$, then which of the following is the most accurate option for $\frac{d^2 y}{dx^2} - 4 \frac{dy}{dx} + 13y = e^{2x} \sin 3x$?

Answer (Please select your correct option)

☐ Its general form of the particular solution will be $Ae^{2x} + B \sin x + C \cos x$.

☐ Its general form of the particular solution will be $e^{2x}(A \sin x + B \cos x)$.

☒ Its general form of the particular solution will be $e^{2x}(Ax \sin x + Bx \cos x)$.



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☐ Its general form of the particular solution will be $e^{2x}(Ax \sin 3x + Bx \cos 3x)$.

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Question No : 21 of 26

Marks: 2 (Budgeted Time 4 Min)

Show that the functions $f_1(x) = \sin x$ and $f_2(x) = x$ are linearly independent.

Answer ([Please click here to Add Answer](#))



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If the complementary solution of the following differential equation is $c_1 \sin 2x + c_2 \cos 2x$, then what will be the general form of its particular solution:

$$\frac{d^2 y}{dx^2} + 4y = \cos 2x$$

Answer (Please [click here](#) to Add Answer)



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Calculate the Wronskian of the following functions. Further determine whether they are linearly independent or not on the interval $(-\infty, \infty)$.

$$f_1(x) = \sin^2 x ; f_2(x) = \cos^2 x$$

Answer ([Please click here to Add Answer](#))



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Question No : 24 of 26

Marks: 3 (Budgeted Time 6 Min)

What will be the general form of the particular solution of the following differential equation:

$$\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + y = e^x$$

Answer ([Please click here to Add Answer](#))



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Question No : 25 of 26

Marks: 5 (Budgeted Time 10 Min)

Deduce the Special Case of Logistic Equation "Epidemic spread"?

Answer (Please [click here](#) to Add Answer)



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Question No : 26 of 26

Marks: 5 (Budgeted Time 10 Min)

Find the general solution of the following non-homogenous differential equation using annihilator operator

$$y'' - 3y' + 2y = 4x^2 + 5?$$

Answer ([Please click here to Add Answer](#))



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