

| Basic Question Practice Set 2 Differential Equations | | | |
|--|---|--|------------------------|
| Que | tions | | JEE Main Crash Course |
| 1. | The equation of the curve satisfying the equation $(xy-x^2)\frac{dy}{dx}=y^2$ and passing through the point $(-1,1)$ is | | |
| | $(1) \ \ y = (\log y - 1)x$ | $(2) y = (\log y + 1)x$ | |
| | $(3) x = (\log x - 1)y$ | $(4) x = (\log x + 1)y $ mathongo /// mathongo | |
| 2. | The solution of $x \frac{dy}{dx} = y + xe^{\frac{y}{x}}$ with $y(1) = 0$ is | | |
| | $(1) \ e^{\frac{y}{x}} + \log x = 1$ | $(2) e^{-\frac{y}{x}} = \log x$ | |
| | (3) $e^{-\frac{y}{x}} + 2\log x = 1$ athongo /// mathongo /// mathongo | (4) $e^{-\frac{y}{x}} + \log x = 1$ mathongo /// mathongo | |
| 3. | The real value of m for which the substitution $y=u^m$ will transform the α | lifferential equation $2x^4yrac{dy}{dx}+y^4=4x^6$ into a homogeneous | s equation is equal to |
| | $\begin{array}{c} (1) \ 1 \\ (3) \ 2 \\ \end{array}$ mathongo \text{\textsupple \text{mathongo}} \text{ mathongo \text{\textsupple \text{mathongo}}} \text{ mathongo} | (2) 1.5 | |
| | | | |
| 4. | The solution of the equation $(1 - x^2) \frac{dy}{dx} - xy = 1$ is {Where C is an arbitr | | |
| | (1) $y\sqrt{x^2-1} = -\log\left(x+\sqrt{x^2-1}\right) + C$ though mathongo | ì | |
| | (3) $y\sqrt{x^2-1} = c - \log(x+\sqrt{x^2-1})^2$ | (4) $x\sqrt{y^2 - 1} = c + \log\left(y - \sqrt{y^2 - 1}\right)$ | |
| 5, | If $y(t)$ is a solution of $(1+t) \frac{dy}{dt} - ty = 1$ and $y(0) = -1$, then $y(-5)$ is $x = -1$ | equal to mathongo /// mathongo | |
| 6. | The solution of differential equation $(1+y^2)+\left(x-e^{\tan^{-1}y}\right)\frac{dy}{dx}=0$ is | | |
| | | (2) $2xe^{\tan^{-1}y} = e^{\tan^{-1}y} + k$ | |
| | (1) $2xe^{\tan^{-1}y} = e^{2\tan^{-1}y} + k$ (3) $xe^{\tan^{-1}y} = e^{\tan^{-1}y} + k$ mathongo | (4) $xe^{\tan^{-1}y} = e^{\tan^{-1}y} - k$ | |
| 7. | If $y=y(x)$ is the solution of the differential equation, $rac{dy}{dx}+2y\tan x=\sin x$ | $\ln x, y\left(\frac{\pi}{3}\right) = 0$, then the maximum value of the function $y(x)$ | over R is equal to : |
| | (1) 8hongo ///. mathongo ///. mathongo ///. mathongo | ` .' | |
| | $(3) -\frac{15}{4}$ | (4) $\frac{1}{8}$ | |
| 8. | The solution of the differential equation $\frac{dy}{dx} = \frac{y}{2ylogy + y - x}$ is | | |
| | $(1) xy = 2y^2 log y + c$ | (2) $3xy = 2y^2 log y + c$ | |
| | $(3) \ 3xy = -3y^2logy + c$ | $(4) \ \ xy = y^2 logy + c$ | |
| 9. | The solution of the differential equation $\frac{dy}{dx} + x(2x+y) = x^3(2x+y)^3$ | 2 is (C being an arbitrary constant) mothongo | |
| | $(1) \ \frac{1}{2x+xy} = x^2 + 1 + Ce^x$ | $(2) \ \frac{1}{(2x+y)^2} = x^2 + 1 + Ce^{x^2}$ | |
| | (3) $\frac{1}{2x+y} = x + 1 + Ce^{-x^2}$ mathongo m | (4) $\frac{1}{(2x+y)^2} = x^2 + 1 + C$ $x > 1 \text{ and } y(\frac{3\pi}{2}) = 0 \text{ is given by which of the following or } x > 1$ | |
| 10. | The solution of the initial value problem $(2\ln x)\frac{dy}{dx} + \frac{y}{x} = \frac{1}{y}\cos x, \ y > 0$, | $x>1$ and $y\left(\frac{3\pi}{2}\right)=0$ is given by which of the following op | otions? |
| | (1) $u = a_A \sqrt{\frac{1-\sin x}{1-\sin x}}$ | (2) $y = a \sqrt{\frac{1+\sin x}{1+\sin x}}$ | |
| | (3) $y = a\sqrt{\frac{1-\cos x}{\ln x}}$ mathongo /// mathongo | (4) $y = a\sqrt{\frac{1 + \cos x}{\ln x}}$ mathongo // mathongo | |
| | $\int \int $ | $V = \ln x$ | |
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