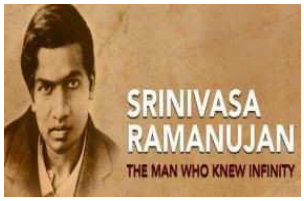
	SRM Institute of Science and Technology **Kattankulathur**	
	DEPARTMENT OF MATHEMATICS	
	18MAB101T Calculus and Linear Algebra	
	UNIT –III – Ordinary Differential Equations	

Sl.No.	**Tutorial Sheet -2**	**Answers**
1	**Solve** $\left(x^2D^2 - xD + 1\right)y = 0$	$y = x(A\log x + B)$
2	**Solve** $\left(x^2D^2 + 4xD + 2\right)y = 0$	$y = \frac{A}{x} + \frac{B}{x^2}$
3	**Solve** $\left(x^2D^2 + 1\right)y = 0$	$y = \sqrt{x}\left[A\cos\left(\frac{\sqrt{3}}{2}\log x\right) + B\sin\left(\frac{\sqrt{3}}{2}\log x\right)\right]$
4	**Solve** $\left((x+2)^2D^2 + 4(x+2)D + 1\right)y = 0$	$y = (A\log(x+2) + B)(x+2)$
5	**Solve** $\left((2x+1)^2D^2 - 2(2x+1)D - 12\right)y = 6x + 5$	$y = A(2x+1)^3 + \frac{B}{2x+1} - \frac{3(2x+1)}{16} - \frac{1}{6}$
6	**Solve** $\left(x^2D^2 + xD - 9\right)y = \frac{5}{x^2}$	$y = Ax^3 + \frac{B}{x^3} - \frac{1}{x^2}$
7	**Solve** $\left(x^2D^2 + xD + 1\right)y = 4\sin\left(\log x\right)$	$y = (A\cos(\log x)x + B\sin(\log x))$ $-2\log x\left(\cos\left(\log x\right)\right)$
8	**Solve** $\left(x^2D^2 - 4xD + 6\right)y = x^2 + \log x$	$y = (Ax^2 + Bx^3) - x^2\log x$ $+\frac{\log x}{6} + \frac{5}{36}$
9	**Solve** $\left(x^2D^2 - xD + 1\right)y = \frac{\log x}{x}$	$y = x(A\log x + B) +$ $\frac{1}{27x^2}\left[3(\log x)^2 + 4(\log x) + 2\right]$