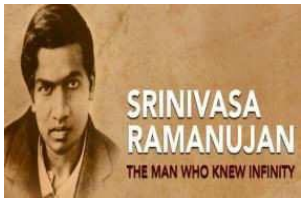
	SRM Institute of Science and Technology Kattankulathur	
	DEPARTMENT OF MATHEMATICS	
	18MAB101T Calculus and Linear Algebra	
	UNIT –III – Ordinary Differential Equations	
	Tutorial Sheet -3	**Answers**
1	**Solve** $\left(D^2+a^2\right)y=\tan ax$ **by the method of variation of parameter**	$y=(c_1\cos ax+c_2\sin ax)$ $-\frac{1}{a^2}\cos ax\log\left[\sec ax+\tan ax\right]$
2	**Solve** $\left(D^2+1\right)y=\sec ax$ **by the method of variation of parameter**	$y=(c_1\cos x+c_2\sin x)$ $-\cos x\log\left(\cos x\right)+x\sin x$
3	**Solve** $\left(D^2+1\right)y=\cos ecx$ **by the method of variation of parameter**	$y=(c_1\cos x+c_2\sin x)$ $+\sin x\log\left(\sin x\right)-x\cos x$
4	**Solve** $\left(D^2+2D+5\right)y=e^{-x}\tan x$ **by the method of variation of parameter**	$y=e^{-x}(c_1\cos 2x+c_2\sin 2x)$ $+\left[-\frac{1}{2}x+\frac{\sin 2x}{4}\right]e^{-x}\cos 2x$ $+\left[-\frac{-\cos 2x}{2}+\frac{1}{2}\log\left(\cos x\right)\right]e^{-x}\sin 2x$
5	**Solve** $\frac{dx}{dt}-y=0;\frac{dy}{dt}+x=0$	$x=A\cos t+B\sin t$ $y=-A\sin t+B\cos t$
6	**Solve** $\frac{dx}{dt}+y=e^t;x-\frac{dy}{dt}=t$	$x=-A\sin t+B\cos t+\frac{1}{2}e^t+t$ $y=A\cos t+B\sin t+\frac{1}{2}e^t-1$
7	$\frac{dx}{dt}+2x-3y=t;\frac{dy}{dt}-3x+2y=e^{2t}$	$x=Ae^t-Be^{-5t}-\frac{2}{5}t+\frac{3}{7}e^{2t}-\frac{13}{25}$ $x=Ae^t+Be^{-5t}-\frac{3}{5}t+\frac{4}{7}e^{2t}-\frac{12}{25}$

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