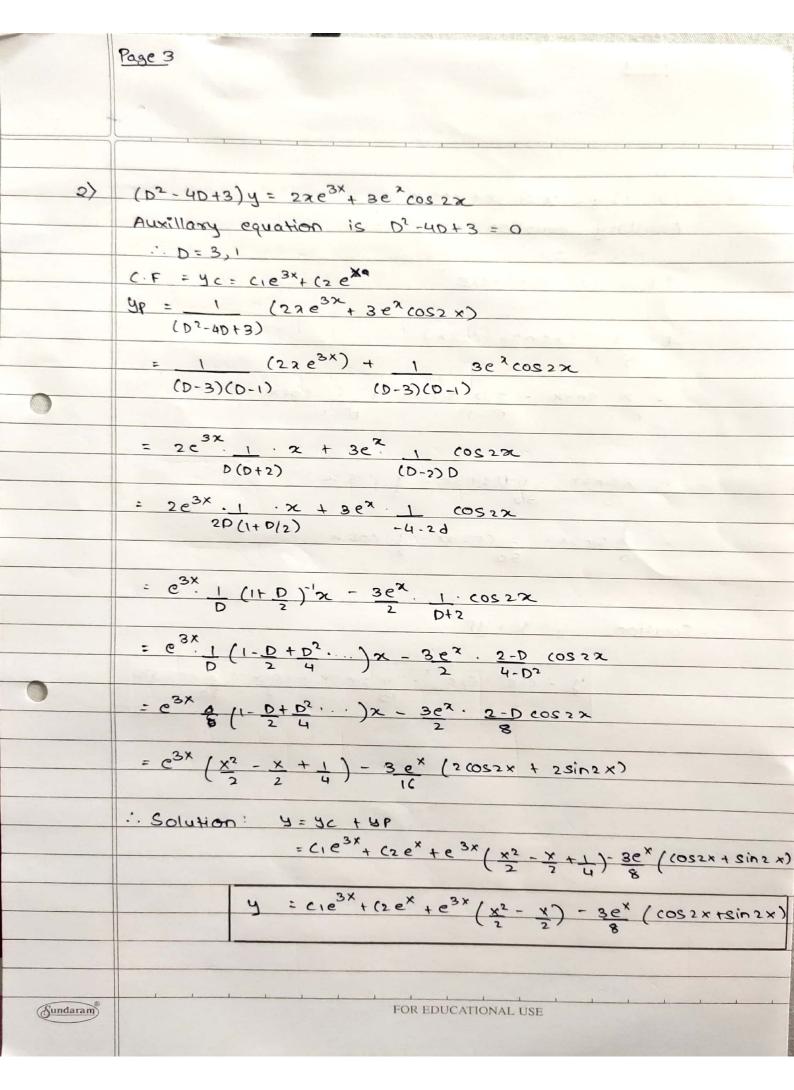
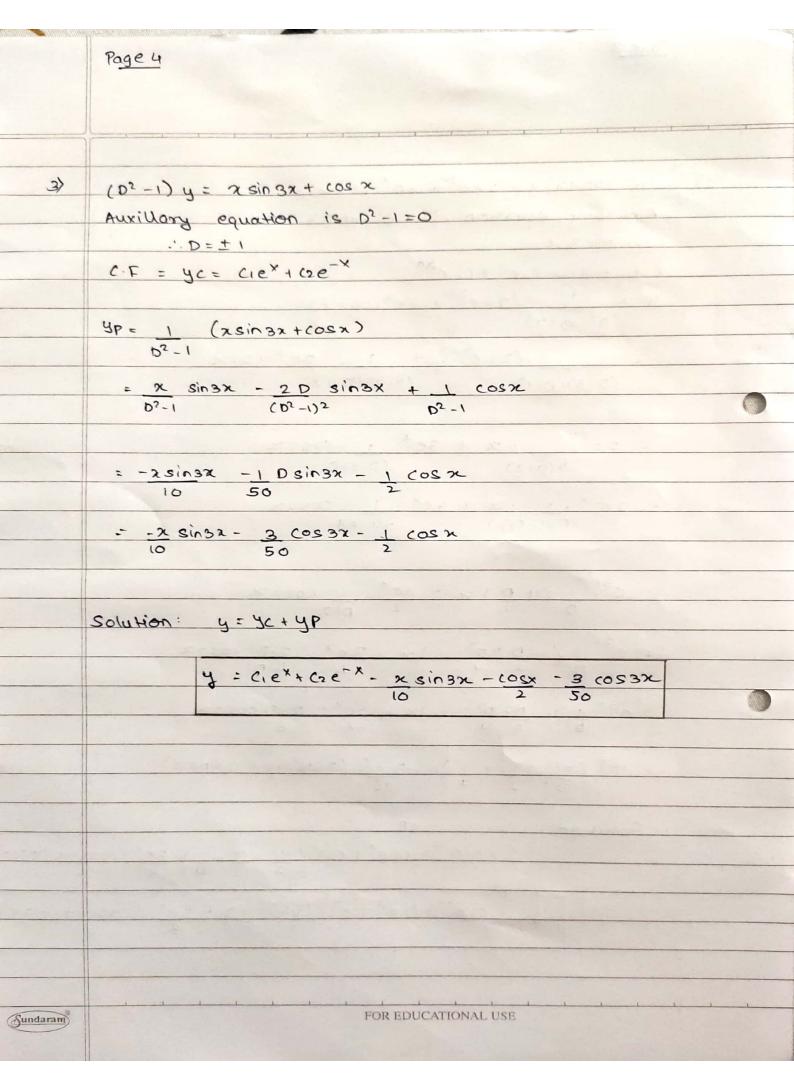
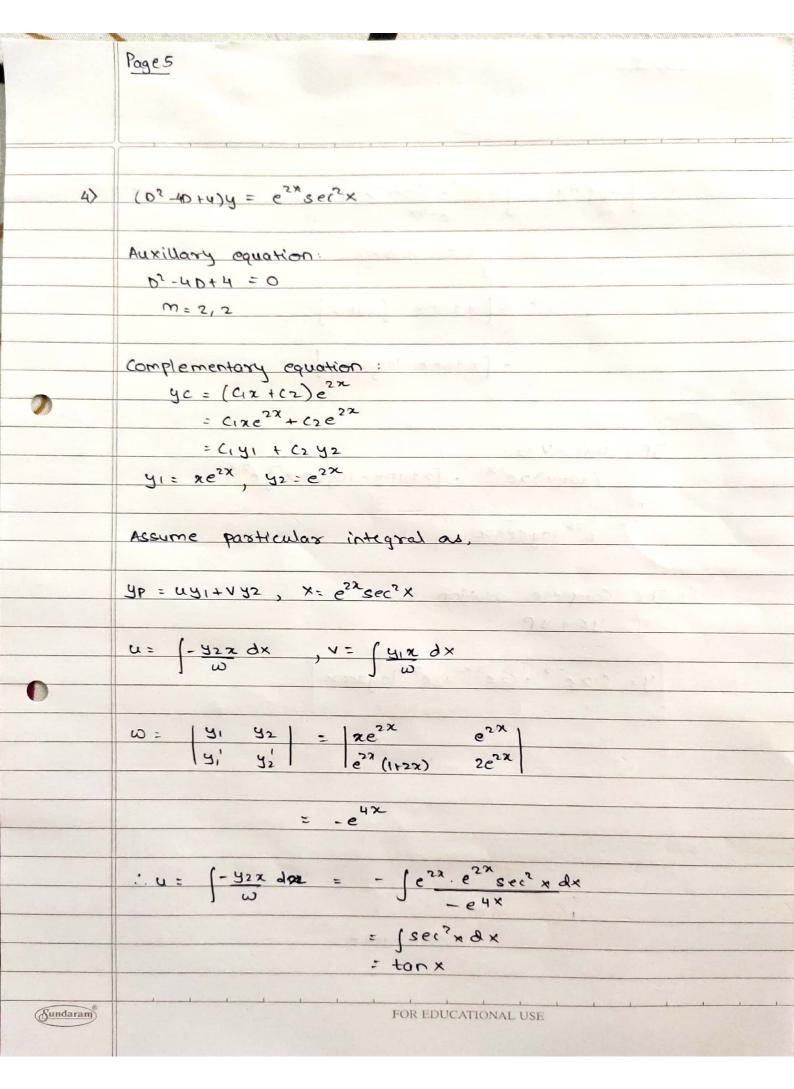
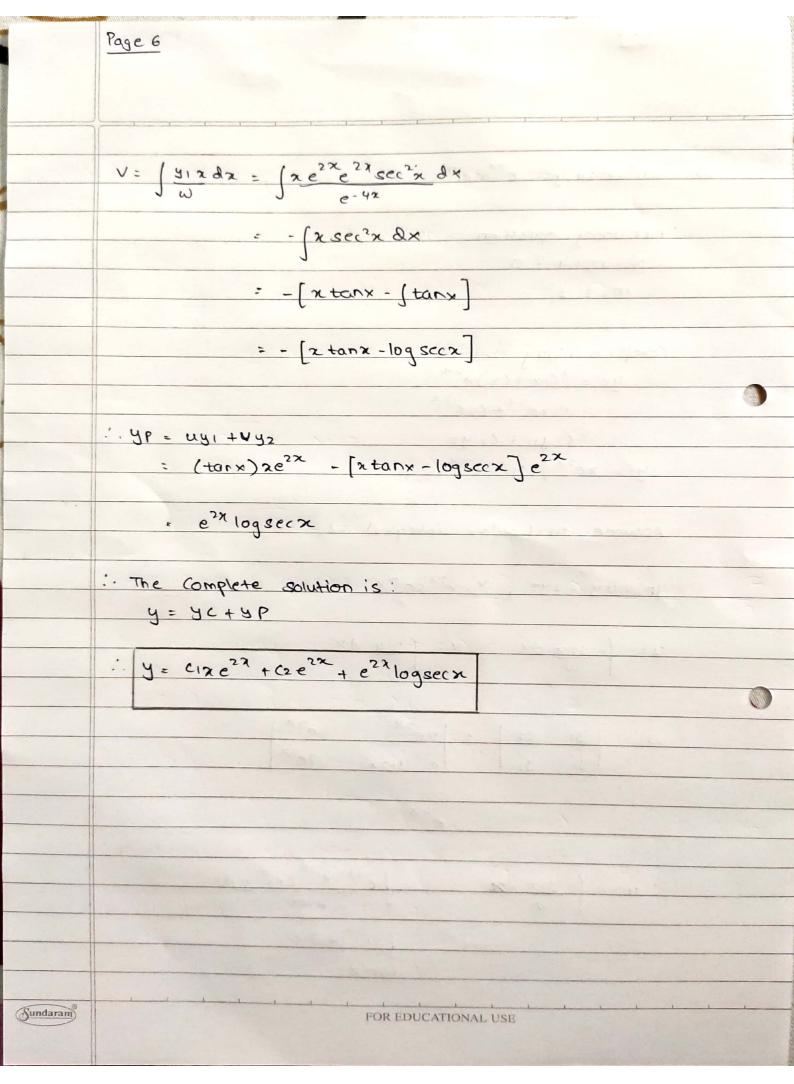
	SAP ID- 6000 4200132 Name - Ayush Jain
02/08/2021	Engineering Maths
	Tutorial 6: Higher order differential Equations.
1>	Solve $(D^2 + 5D + 6)y = e^{-2x} sec^2x(1 + 2 tanx)$
2>	Solve (D2-40+3)y = 2xe3x + 3ex cos2x
3>	Solve $(D^2-1)y = x \sin 3x + \cos x$
4>	Solve by the method of variation of parameters
	$(0^2-40+4)y = e^{2x} \sec^2 x$
5>	Solve $x^2 \frac{d^3y}{dx^3} + 3x \frac{d^2y}{dx^2} + \frac{dy}{dx} = x^2 \log x$
•	
Sundaram	FOR EDUCATIONAL USE

```
Page 2
       Solutions
  1) (D2+5D+6)y = e2x (1+2+anx)
        Auxillary equation is,
          D2+50+6 = 0
       C.F. = yc= cie3x + (2e
       yp= 1 e2x sec2x (1+2+anx)
          = 1 e sec2x (1+2+anx)
         = e-2x [ se2x (1+2+anx) dx
          Put tanx = t
          sec2x dx = dt
       \frac{e^{-2x}}{p+3} \int (1+2t) dt = \frac{e^{-2x}}{(p+3)} (t+t^2)
          = 1 [e-2x(tanx+tan2x)]
          = e-3x [e3x e-2x (tanx + tan2x) dx
          = e-3x fex (tonx + sec2 x-1) dx
          : e-3x [ex tonx - ex]
          = e -2x (tonk -1)
        . Solution : 4 ye ye + 4P
                           FOR EDUCATIONAL USE
Sundaram
```









And the second s	Page 7
5>	$x^{2} \cdot d^{3}y + 3x d^{2}y + dy = x^{2} \log x$
	multiplying throughout by x,
	$\frac{1}{12} \frac{1}{12} \frac$
	It is cauchy's linear differential equation.
	Put x = e : z = logx
	$\frac{\lambda dy}{dx} = \frac{Dy}{dz}$
	$\frac{\partial^2 \partial^2 y}{\partial x^2} = O(D-1)y$
7	$dx^3$ = $D(0-1)(D-2)$ 4
	On substituting in equation (i)
	$D(D-1)(D-2)y + 3D(D-1)y + Dy = e^{3z}.z$
	$1.03y = e^{32}.7 - (2)$
	Equation (2) is a linear differential equation with constant coefficients.
	Auxillary equation: D3=0
	m=0,0,0
Eundaram	FOR EDUCATIONAL USE

