10/11/2011

DIFFERENTIAL EQUATIONS
2011-2012 FALL SEMESTER, WORKSHEET 3

1) Solve the differential equations

a) $2y''' - 4y'' - 2y' + 4y = 0$

b) $y^{iv} + 6y''' + 17y'' + 22y' + 14y = 0$ **.**

2) If $\boldsymbol{y_1(t) = e^t}$ is a solution of *the homogeneous differential equation*

$\boldsymbol{(2-t)y''' + (2t-3)y'' - ty' + y = 0}$ **,** t<2*,* find linearly independent other solutions use the method of reduction of order.

3) Solve initial value problem $y^{iv} + 2y'' + y = \sin t,\ \ y(0) = 2,\ y'(0) = 0,\ y''(0) = -1,\ y'''(0) = 1$.

4) Find the general solution of differential equation $y^{iv} - y''' - y'' + y' = t^2 + 4 + t\sin t$ **.**

5) Use the method of variation of parameters to determine the general solution $y''' - y' = t$ **.**