Math 3260.

Assignment 3 Due Oct. 30

1. If the Wronskian of f and g is $3e^{4t}$, and if $f(t)=e^{2t}$, find $g(t)$.
If the Wronskian of f and g is t^2e^t, are they linearly dependent?

2. are y_1 and y_2 the solutions of given equation?
Do they constitute a fundamental set of solutions?

1). $y''-2y'+y=0$, $y_1(t)=e^t$, $y_2(t)=te^t$.

2). $x^2y''-x(x+2)y'+(x+2)y=0$, $x>0$; $y_1(x)=x$, $y_2(x)=xe^x$.

3. Solve the initial value problem
$$y''-y'-2y=0,\ y(0)=\alpha,\ y'(0)=2.$$
Then find α so that the solution approach zero as $t\to\infty$.

4. Find the solution of the given problem. describe its behavior as t increases.

1). $y''+4y'+5y=0$, $y(0)=1$, $y'(0)=0$

2) $y''+y'+1.25y=0$, $y(0)=3$, $y'(0)=1$

3) $y''-2y'+5y=0$, $y(\frac{\pi}{2})=0$, $y'(\frac{\pi}{2})=2$.

5. Find the solution of given problem.

1) $y''+4y=t^2+3e^t$

2) $y''-2y'+y=te^t+4$

3) $y''+2y'+y=2e^{-t}$

4). $y''+4y=3\sin 2t$, $y(0)=2$, $y'(0)=1$.

6. Determine a suitable form for particular solution $Y(t)$, without solving the differential equation.

1). $y''+3y'+2y=e^{3t}(t^2+1)\cos 2t+4e^{-2t}\sin t+5$

2). $y''+3y'=2t+5+te^{-3t}+\cos 4t$