Math 222 Quiz 9

Nov. 11, 2010

Your Name: *Your Section:*

Instructions: Time is 20 minutes and the total score is 10 points. There are bonus problems. **Check your answers by plugging in back.**

1. Solve the equation by undetermined coefficients $y'' - y = e^x + x^2$ (4 pts)

2. $3\cos x + 4\sin 2x - y'' = 4y$. Find:
   The general solution (4 pts).
   The solution which satisfies $y(0) = 2$, $y(\frac{\pi}{4}) = 0$ (2 pts).

Bonus:
a). We have the equation $73y'' - 9.75y' + 19y = 1.3x^7 + e^{\sqrt{3}x}$. If y_{p1} is a particular solution to $73y'' - 9.75y' + 19y = 1.3x^7$ and y_{p2} is a particular solution to $73y'' - 9.75y' + 19y = e^{\sqrt{3}x}$, explain $y_{p1} + y_{p2}$ is the particular solution we want. (1 pt)

b). A mass m is attached on a spring that has a spring constant k. Pull the mass with a displacement L from equilibrium position O to A' and then release it. Supposing no friction, find the time the mass needs to reach the midpoint of O and A' for the first time. (2 pts)