

Math 307 Quiz 5

May 9, 2014

Problem 1. Find the general solution to the differential equation

$$y'' - 2y' + y = 3e^t$$

Problem 2. Consider the differential equation

$$(*) \quad y'' - 2y' + y = 3e^t \sin(2t).$$

Suppose that \tilde{y}_p is a particular solution to the differential equation

$$\tilde{y}'' - 2\tilde{y}' + \tilde{y} = 3e^{at}$$

for what value of a is $y_p = \text{Im}(\tilde{y}_p)$ a particular solution to $(*)$?

Problem 3. Find a particular solution to the differential equation

$$y'' - 2y' + y = 3e^t \sin(2t).$$

Problem 4. Find a particular solution to the differential equation

$$y'' - 2y' + y = 4e^t \sin(2t) + 5e^t \cos(2t)$$