Math 333
Quiz 8
Thursday, April 10, 2008

1. Let $p > 0$ and $q > 0$ denote real, positive constants, and let $g(t)$ be a continuous function of t. Suppose that $2e^{-t} + \sin t + 4$ is a *particular* solution of the differential equation $y'' + py' + qy = g(t)$. Let $y(t)$ denote the *general* solution of the differential equation. Describe the behavior of $y(t)$ as $t \to \infty$. Does the behavior of $y(t)$ depend on the initial conditions?

2. Find the general solution of the differential equation $y''' - y'' - y' + y = 0$.

3. Find the general solution of the differential equation $y''' - y' = 2\sin t$.