18.034 Honors Differential Equations

Spring 2009

18.034 Recitation: February 19th, 2009

1. Find the rest solution to

$$y'' - y = 4\sin t.$$

Do the same for

$$y'' - y = 4e^t.$$

2. Show that the equation

$$(3e^{2y}x^{\frac{2}{3}} - x)y' = 1$$

becomes an equation of Bernoulli type if x and y are interchanged. Solve that equation and obtain an equation for x. Find an explicit formula for $y = y(x)$ for the solution satisfying $y(1) = 0$.

3. Solve

$$2t^2y'' + (y')^3 = 2ty'.$$

4. Solve

$$y'' + (y')^2 = 2e^{-y}.$$

5. Solve

$$y'' + 7y' + 12y = 0$$

subject to the initial conditions $y(0) = 1$, $y'(0) = 4$.