Practice Problems 6

Math 4B, Spring 2017, Dr. Paul

Practice problems are for your own benefit. You won't turn them in or have them graded, but I have the expectation that you have done these when I write my tests. You can check answers with a TA, in Math Lab, or with the professor.

1. Find the general solutions to the third and fourth order differential equations below. You can use a calculator to factor polynomials if necessary.

   (a) $y''' = 0$

   (b) $y''' + y' = 0$

   (c) $y''' + 11y'' - 6y' + 6y = 0$

   (d) $y''' + 5y'' + 3y' - y = 0$

   (e) $y''' + 3y'' + 3y' + y = 0$

   (f) $y'''' - y = 0$

   (g) $y'''' + 2y'' + y = 0$

2. Find the general solutions to the following.

   (a) $y'' - 5y' + 6y = 12e^t$

   (b) $y'' - 5y' + 6y = 12e^{-t}$

   (c) $y'' - 5y' + 6y = e^{4t}$

   (d) $y'' - 5y' + 6y = 5$

   (e) $y'' + 9y = \cos t$

   (f) $y'' - 5y' + 6y = \cos t$

   (g) $y'' - 5y' + 6y = e^{3t}$

   (h) $y'' + 9y = e^t \sin t$

   (i) $y'' - 5y' + 6y = e^t \sin t$

   (j) $y'' - 5y' + 6y = 4t^2 + 3t + 1$

   (k) $y'' + 6y' + 9y = e^{3t}$

   (l) $y'' + 6y' + 9y = te^{3t}$

   (m) $y'' + 4y = \sin(2t)$

   (n) $y'' + 2y' + 5y = e^t \sin(2t)$

   (o) * $y'' + y = \tan x$