MATH 1B: CALCULUS DISCUSSION SECTION 2 WORKSHEET 11

A banquet of differential equations to solve...but don't be too hasty! First go through and have a taste of each of the ODEs below by deciding how you will solve it. If you are using an integrating factor, write it down. If you are using undetermined coefficients, write the form of your solution. AFTER you have indicated HOW you will solve each of these equations, go back and ACTUALLY solve them. NOTE that for some problems a combination of methods may be appropriate (e.g. variation of parameters and method of undetermined coefficients) and you may need to consider dredging your memory for approximation methods!

Figure 1: HAPPY THANKSGIVING!

(a)
$$y'' + 4y' + 3y = \frac{1}{1 + e^{2x}}$$

(b)
$$y' + \frac{\ln(x)}{x}y = \frac{\ln(x)}{x}$$

(c)
$$y'' - 8y' + 16y = e^{4x}$$

(d)
$$y'' + \pi y' + \pi^3 y = 0$$

(e)
$$y'' + y = \csc(x)$$

(f)
$$y'' - y = \frac{1}{x}$$

(g)
$$y' + (1 - x^2)^{-1/2}y = 3$$

(h)
$$y'' + 2y' + y = e^x \cos(x)$$

(i)
$$y'' + y = e^x + \sec(x)$$

(j)
$$y' = e^{-x^2/2}$$