MAT 2680 Differential Equations Quiz 3 Fall 2013 Halleck

$\frac{dy}{dt} + p(t)y = g(t)$ is a(n) ___**linear**___differential equation of order **one** with **nonconstant (or variable)** coefficients. To solve the equation, we multiply both sides by $\mu(t) =$___**e^int(p(t))**___, also known as a(n)_**integral**___ ___**factor**___ (2 words). The antiderivative of the LHS will then be ____**yμ(t)**_____. Thus, provided that the integral used to determine $\mu(t)$ can be found and that an antiderivative for $\mu(t)g(t)$ exists, then a closed form family of solutions can be found for the diffeq. Otherwise, the solution will contain one or more unevaluated __**integral**__. Below you will find the family of solutions $y = t^2 + \frac{c}{t^2}$ and the particular solution going through (1,2): $y = t^2 + \frac{1}{t^2}$. The domain of this particular solution is___**(0,∞)**___. When c=0, we get the particular solution: $y = t^2$ with domain ___**(-∞,∞)**_____, which divides the family of solutions into those that are asymptotic to the positive and negative _**y-axis**_____.