Take Home Quiz 1

Name:_____

Instructions: Be sure to follow the instructions carefully. You may review techniques using a calculus text, but you may not consult other students, and you may **not** use a symbolic algebra package (like Maple or Wolfram Alpha).
    Write your solutions up neatly and completely. Staple everything together.
    DUE: Wednesday before class.

1. Evaluate the following integral: $\int x e^{-2x}\, dx$ (Hint: Integration by parts)

2. Exercise 18, Section 1.3: Determine all values of r so that $y = e^{rt}$ is a solution to the third order differential equation $y''' - 3y'' + 2y' = 0$.

3. Exercise 16, Section 2.1: Solve the IVP:

$$y' + \frac{2}{t}y = \frac{\cos(t)}{t^2}$$

    with $y(\pi) = 0$, and $t > 0$.

Maple Lab 1 (this is modified from the online handout)

On Maple or Mathematica, please solve the following. Once you've finished, upload the results (the Maple .mw file or a PDF file for Mathematica) to your CLEO dropbox. **Due: Wednesday, Jan 23, 11:59PM**
    Watch the video on the class website (the second one) if you're using Maple.
    For problems 1.1.26 and 1.1.32, plot the direction fields for each and comment about the long term behavior of the solutions. Some notes:

- Don't forget to use * when multiplying anything together.

- The exponential function is not e^x, but rather `exp(x)`

- To make a comment, begin the command with #, as in:

    ```
    > # The long term behavior looks like...
    ```