Spring 2020   Math 337 - Lecture 9   Name _____

Note: For full credit you must show intermediate steps in your calculations. Your work must be your own. Copying or sharing solutions with others may subject you to disciplinary action based on the appropriate sections of the San Diego State University Policies.

1. (5pts) Suppose that $f(t)$ has a *Laplace Transform* $F(s) = \mathcal{L}[f(t)]$, where

$$F(s) = \frac{12}{s^3} + \frac{6}{s^2 + 9} + \frac{20s}{(s - 2)^2 + 4}.$$

Find $f(t)$. (Slide 3-4 and Laplace Table)

2. (5pts) Suppose that $f(t)$ has a *Laplace Transform* $F(s) = \mathcal{L}[f(t)]$, where

$$F(s) = \frac{2s^2 + 16s + 80}{s^2(s^2 - 12s + 40)}.$$

Find $f(t)$. (Slide 6-8 and Laplace Table)

3. (6pts) Solve the following initial value problem with *Laplace transforms*:

$$y'' - 4y' + 8y = 20\cos(2t), \qquad y(0) = 5, \quad y'(0) = 6.$$

Use the Laplace table (https://jmahaffy.sdsu.edu/courses/s20/math337/hwprob/Reviews/Laplace Table.pdf) to find your solution. (Slide 5-8, and video example)