MATH 250 Exam #4 Fall 2007	Show work and check your results as time permits.	**Name:**

Prob. Num.	Point Value	Points Given
1	**20**	
2	**20**	
3	**20**	
4	**20**	
5	**20**	
Total	**100**	
Curve		
Grade		

1) A 0.75-kg mass is attached to a spring with stiffness 9 N/m. The damping constant for the system is 0.6 N-sec/m. If the mass is moved 110 cm to the left of equilibrium and released, what is the maximum displacement to the right that it will attain?

2) Determine the equation of motion for an undamped system at resonance governed by $\frac{d^2y}{dt^2} + 2y = 5\sin t;\quad y(0) = 0,\ y'(0) = 0.5\,.$

3) Use the definition of the Laplace transform to find $L\{f\}$ for the function

$$f(t) = \begin{cases} 2t, & 0 < t < 3 \\ 0, & t > 3 \end{cases}$$

4) Find $L\left\{e^{5t}\cos\sqrt{2}t - 8t^4\right\}$

5) Find $L\{\sin 4t \cos 4t\}$