

## Math 252 X01 Assignment

Name: \_\_\_\_\_

Due: At the beginning of class, Friday April 8th

Covers Sections 7.1-7.5

Total: 18 marks

### INSTRUCTIONS

- \* Print this paper and submit your work on this paper.
- \* If you are away on the due date then submit via the D2L Dropbox.
- \* You may discuss with others but your write-up must be your own work.
- \* Show all your work for full marks.

1. [4 marks] Solve using the Laplace transform:  
 $y'' - 7y' + 12y = 8e^{2t}, y(0) = 7, y'(0) = 6$

2. [4 marks] Solve for  $f(t)$ :

$$f(t) = 7t^8 - \int_0^t f(\theta)e^{t-\theta}d\theta$$

3. [5 marks] Solve using the Laplace transform:  
 $y'' - y' = 2e^t \sin t, y(0) = 0, y'(0) = 0$

4. [5 marks]

a) Solve using the Laplace transform:

$$y' + 7y = f(t), y(0) = 0, \text{ where } f(t) = \begin{cases} 0, & 0 \leq t < 2 \\ 4, & t \geq 2 \end{cases}$$

b) Find  $y(0.1)$

c) Find  $y(3)$