Math 242, Fall 1994, Exam 3

PRINT Your Name:_____

There are 6 problems on 3 pages. Problems 3 and 4 are worth 9 points each. Each of the other problems is worth 8 points. The exam is worth a total of 50 points. SHOW your work. $\boxed{CIRCLE}$ your answer. **CHECK** your answer, whenever possible.

1. Find all solutions of $y'' = (y')^2$.

2. Find all solutions of $x^2 y'' + 3xy' - 3y = 0$.

3. Find ONE solution of $y'' + 2y' + 2y = \cos x$.

4. Find ONE solution of $y'' + y = \sec x$.

5. Find $\mathcal{L}^{-1} \left(\dfrac{s^2 - 2s}{s^4 + 5s^2 + 4} \right)$.

6. Find $\mathcal{L}(f(t))$ for

$$f(t) = \begin{cases} t & \text{if } 0 \le t \le 1, \text{ and} \\ 0 & \text{if } 1 < t. \end{cases}$$