

**MATH 2850: TEST 09 (25 points.)**

**NAME:** \_\_\_\_\_

**DUE:** Wednesday, March 27th, at the beginning of class.

**DIRECTIONS:** Show all work.

1. Consider the IVP:  $2x^2 y'' + 3x y' - 6y = 12x^2$ ,  $x > 0$  with  $y(1) = 4$ ,  $y'(1) = 11$ .

(a) Explain why the ODE is a Cauchy - Euler Equation.

(b) Find the complementary solution,  $y_c$

(c) Find the general solution to  $2x^2 y'' + 3x y' - 6y = 12x^2$ ,  $x > 0$  using Variation of Parameters.

(d) Solve the IVP:  $2x^2 y'' + 3x y' - 6y = 12x^2$ ,  $x > 0$  with  $y(1) = 4$ ,  $y'(1) = 11$ .