

**Quiz 10**

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

Answer all questions in a clear and concise manner. Unsupported answers will receive *no credit*.

1. Find the two values of  $s$  such that  $y = e^{sx}$  is a solution to the differential equation

$$y'' - 2y' - 3y = 0$$

by substituting the equation for  $y$  and solving the resulting quadratic. Find a sum of constant multiples of your solutions (so an equation of the form  $y = c_1e^{s_1x} + c_2e^{s_2x}$  for some constants  $c_1$  and  $c_2$ ) that obeys the initial conditions  $y(0) = 2$  and  $y'(0) = 2$ .