

Please show all necessary work completely and clearly.

- (1) (5 Points) Show that $y(x) = 1$, $y(x) = e^{-x}$, and $y(x) = e^{2x}$ are linearly independent functions.

- (2) (5 Points) Find the general solution to the differential equation

$$y''' - y'' - 2y' = 0.$$