

Name [1 Pt]: _____ Quiz Score: _____/(4+1)

Answer all questions. Show all work, and carefully explain your reasoning.

2 1. $(1-t)y''(t) + ty'(t) - y(t) = 2(t-1)^2e^{-t}$, $y_1(t) = e^t$, $y_2(t) = t$, $0 < t < 1$.

Find $\mathbf{W}(y_1(t), y_2(t))$:

Solution:

2 2. Use variation of parameters to solve the above equation.

hint: $Y(t) = -y_1(t) \int_{t_0}^t \frac{y_2(t)g(s)}{W(y_1(t), y_2(t))} ds + y_2(t) \int_{t_0}^t \frac{y_1(t)g(s)}{W(y_1(t), y_2(t))} ds$

Solution: