316-QUIZ 4

Name:_____

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1 < >

Given the Initial Value Problem

$$ty'' - (t+2)y' + 2y = 0 \ , \ y(-1) = 0 \ , \ y'(-1) = 1$$

and the two functions

$$y_1(t) = e^t \ , \ y_2(t) = t^2 + 2t + 2 \ .$$

Verify that y_1, y_2 form a linearly independent set of solutions of the DE, give the general solution and solve the IVP.

2 < >

The DE

$$x\frac{d^2y}{dx^2} + (1-2x)\frac{dy}{dx} + (x-1)y = 0 \ , \ x > 0$$

has the solution

$$f(x) = e^x \ .$$

Find a second linearly independent solution using the method of reduction of order. Thus assume a solution in the form

$$y(x) = u(x)e^x$$

and find $u(x)$.