

Math 240 - Quiz 1

January 19, 2023

Name _____

Score _____

Supply explanations if necessary.

1. (8 points) State whether each equation is ordinary or partial, linear or nonlinear, give its order, and say which variable is dependent.

(a) $\frac{\partial^2 u}{\partial y^2} + \frac{\partial^2 u}{\partial x^2} = x^2 + y^2$

(b) $(x^2 + y^2) dx + 2xy dy = 0$

(c) $t^2 x'' - 3tx' + 2x = t^2 \sin 5t$

(d) $y \frac{dy}{dx} - e^x y = -3x + 5$

2. (2 points) Show that $y_1 = e^{2x}$ and $y_2 = e^{-3x}$ are solutions of $y'' + y' - 6y = 0$.