

Quiz I

Answer each question as completely as you can; remember you must show *all work* for full credit. You may not consult books, notes, or each other for this quiz. Good luck!

Consider the differential equation

$$u_t = -\frac{x^2}{2}u_{xx} \quad (1)$$

1. State the order of (1). (3 points)
2. State whether (1) is linear or nonlinear. (3 points)
3. Verify that $u = x^2e^{-t}$ is a solution of (1). (4 points)