Problem 21

In each of Problems 21 through 24, determine the order of the given partial differential equation; also state whether the equation is linear or nonlinear. Partial derivatives are denoted by subscripts.

\[ u_{xx} + u_{yy} + u_{zz} = 0 \]

Solution

The second derivative of \( u \) is the highest derivative, so the order of the PDE is 2. The PDE is linear because there are no nonlinear functions of \( u \).