

## 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.

$$u_{xx} + u_{yy} + u_{zz} = 0$$

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### 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  $u$ .