

## Problem 5

In each of Problems 1 through 6, determine the order of the given differential equation; also state whether the equation is linear or nonlinear.

$$\frac{d^2y}{dt^2} + \sin(t + y) = \sin t$$

---

### Solution

The second derivative of  $y$  is the highest derivative, so the order of the ODE is 2. The ODE is nonlinear because there is a nonlinear function of  $y$ , namely  $\sin(t + y)$ .