

## Problem 9

In each of Problems 9 and 10, let  $\phi_0(t) = 0$  and use the method of successive approximations to approximate the solution of the given initial value problem.

- (a) Calculate  $\phi_1(t), \dots, \phi_3(t)$ .
- (b) Plot  $\phi_1(t), \dots, \phi_3(t)$  and observe whether the iterates appear to be converging.

$$y' = t^2 + y^2, \quad y(0) = 0$$