

Homework for Power Series and Differential Equations.

1. Do numbers 1-5 page 503.
2. Find the first five terms of the power series of the solution of the following

$$\frac{dy}{dt} = ty, \quad y(0) = 2.$$

3. Find the first five terms of the power series of the solution of the following

$$\frac{dy}{dt} = y + 5, \quad y(0) = 0.$$

4. Find the first five terms of the power series of the solution of the following

$$\frac{d^2y}{dt^2} = -2y + 1, \quad y(0) = 1, y'(0) = 0.$$

5. Find the first five terms of the power series of the solution of the following

$$\frac{d^2y}{dt^2} = -ty + 3, \quad y(0) = 2, y'(0) = 0.$$

6. Find the first five terms of the power series of the solution of the following

$$\frac{d^2y}{dt^2} = -\frac{dy}{dt} - 2y + \cos(t), \quad y(0) = 2, y'(0) = 0.$$

7. Find the first five terms of the power series of the solution of the following

$$\frac{d^2y}{dt^2} + t\frac{dy}{dt} - y^2y = 0, \quad y(0) = 1, y'(0) = 2.$$