Question —– assigned:

1. Consider the IVP
$$\frac{dy}{dt} = \frac{\sin(2t) - 2ty}{t^2}, \quad y(1) = 2, \quad t \in [1, 5]$$
Apply second order Taylor's method to solve this IVP, for a general N.

2. Consider the IVP
$$\frac{dy}{dt} = \frac{\sin(2t) - 2ty}{t^2}, \quad y(1) = 2, \quad t \in [1, 5]$$
Apply Euler's method to solve this IVP, for a general N.

3. Consider the IVP
$$\frac{dy}{dt} = \frac{\sin(2t) - 2ty}{t^2}, \quad y(1) = 2, \quad t \in [1, 5]$$
Show that the problem is well-posed and find the exact solution.