
2022 Differential Equation Python Quiz 2

- Internet and book are allowed!

1. For the equation $y'' = t^2 + 2 \cos(t)$, do the following:

a) Solve the given differential equation, with $y(0) = 1$ and $y'(0) = 0$ as the initial value.

Using both numerical(odeint) and symbolic(dsolve) methods (30 points)

- Hint : You can use sympy to show the odeint result

Use time range between 0 and 1 with 10 equally spaced points.

use display() symbolic solution.

b) Plot your numeric solutions (30 points)

Hint: You have to have two separate plots. One is y with respect to time and another is y' with respect to y

c) Obtain the the first order derivative of the symbolic solution obtained in part a) (20 points)

Hint: You won't be able to take Derivative of Derivative object, so you need to think ;)

d) Obtain the the second order derivative of the symbolic solution obtained in part a) (20 points)