Q1

6 Points

Check that the following differential form are exact and find the solution to the corresponding initial value problem:

$$\frac{y}{t+1} \, dt + \left(\ln(t+1) + 3y^2\right) dy = 0, \quad y(0) = 1.$$

Q2

4 Points

Calculate the differential dF for the following function F and find $\frac{dy}{dt}$ at the point $(\pi/2, 0)$. Show your work!

$$F(t, y) = t^2 y + \sin(t + y^2)$$