Your Preferred Name

Student ID #

Consider the following initial value problem:

$$y'' = u_1(t) \cdot \cos(t-1), \qquad y(0) = 0, y'(0) = 0.$$

(Take $t \geq 0$.)

1. Compute the Laplace transform of the right-hand side of the above differential equation.

2. Compute

$$\mathcal{L}^{-1}\left(\frac{e^{-s}}{s(s^2+1)}\right).$$

(Hint: partial fractions.)

3. Solve the above initial value problem. **What is** $y(\pi+1)$**?**