MAP 2302 - Quiz #3 **Name:**

For full credit, you must show all work and circle your final answer.

1 *(2.5 point)* Find the Laplace transform of the periodic function below.

$$f(t) = e^t, \quad 0 < t < 1, \text{ and } f(t) \text{ has period 1.}$$

2 (a) *(1.5 points)* Show that

$$2\sum_{n=0}^{\infty} a_n x^{n+1} + \sum_{n=1}^{\infty} n b_n x^{n-1} = b_1 + \sum_{n=1}^{\infty} \left[2a_{n-1} + (n+1)b_{n+1}\right] x^n$$

(b) *(1 points)* Given

$$\sin(x) = \sum_{k=0}^{\infty} \frac{(-1)^k}{(2k+1)!} x^{2k+1},$$

find a power series for $\cos(x)$. (Show work, do not simply write an answer.)

University of Florida Honor Code:

On my honor, I have neither given nor received unauthorized aid in doing this assignment.

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Signature