

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

- 1 (2.5 point) Write the following piecewise function in terms of step and window functions then find the Laplace transform

$$f(t) = \begin{cases} \cos(t) & 0 < t < 2\pi \\ t & 2\pi < t < 8 \\ t^2 & t > 8 \end{cases}$$

- 2 (a) (1.5 points) Find the power series expansion of $f + g$ in the form $\sum a_n x^n$ given

$$f = \sum_{n=3}^{\infty} \frac{2^n}{n!} x^{n-2}, \quad g(x) = \sum_{n=1}^{\infty} \frac{n^2}{2^n} x^{n-1}$$

- (b) (1.5 points) Find the power series expansion of $g'(x)$ in the form $\sum a_n x^n$.

University of Florida Honor Code:

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

Signature