

MATH 106-004      Quiz 2

Date: February 28, 2025

NAME:.....

Time: 14:50–15:20

STUDENT ID:.....

**Problem 1** Let  $f(t) = \begin{cases} \cos t & , t < 0, \\ 1 - t & , t \geq 0. \end{cases}$

**(a) (20 points)** Find the derivative of the accumulation function  $F(x) = \int_{x-1}^x f(t) dt$ , where  $0 < x < 1$ .

**(b) (20 points)** Find the average value of  $f(t)$  on  $[-\pi/2, 0]$ .  
*No partial points.*

Please write the average value below.

**Problem 2 (20 points)** Find all values of  $c$  that satisfy the Mean Value Theorem for Integrals for  $f(x) = x^3$  on the interval  $[1, 2]$ .  
*No partial points.*

Please write the  $c$  values that satisfy the Theorem below, if applicable.

**Problem 3 (40 points)** Evaluate the area bounded by the graphs of the functions  $f(x) = \sqrt{x}$  and  $f(x) = x$ .