

Quiz #3 (EngMath I) [Wednesday, November 2, 2016]

Name: _____ **Dept:** _____ **ID No:** _____

1. (10 points) Compute the Fourier series of the following function:

$$f(x + 2\pi) = f(x) = \begin{cases} 0, & \text{if } -\pi < x < 0 \\ \pi - x, & \text{if } 0 < x < \pi \end{cases}$$

2. (15 points)

(a) (7 points) Compute the Fourier integral of the following function:

$$f(x) = \begin{cases} 0, & \text{if } x < 0 \\ 1, & \text{if } 0 < x < 2 \\ 0, & \text{if } x > 2 \end{cases}$$

(b) (8 points) Show that

$$\int_0^{\infty} \frac{\sin 2x}{x} dx = \frac{\pi}{2}$$