

**MATH 102 - Quiz 2**

Section number:

Student ID:

Instructions: You are required to attempt all questions. Each is worth 10 points.

1. Determine whether the following series converges or diverges:

(a) 
$$\sum_{n=1}^{\infty} n \sin\left(\frac{1}{n}\right)$$

(b) 
$$\sum_{n=1}^{\infty} \frac{(-1)^{n-1} + 2^n}{3^n}$$

2. Determine whether the integral  $\int_0^1 \frac{dx}{3x-2}$  is convergent or divergent.3. Compute  $\int_1^{\infty} \frac{\ln(x)}{x^2} dx$ 4. Evaluate  $\int \frac{x^2 + 2x - 1}{x^3 - x} dx$ 5. Evaluate  $\int \frac{\sqrt{x^2 - 4x}}{x - 2} dx$