

American International University-Bangladesh

**Faculty of Science and Technology**

**Department of Mathematics**

**MAT1205: Integral Calculus and Ordinary Differential Equations**

Midterm Examination

Total Marks: 40 Time: 2 hours

**1.** Answer the following short questions(sample): (10)

**(a)**, **(b)**, write the substitution, **(c)** find,

**(d)** **(e)** **(f)**

**(g)** **(h) (i)**,

**(j)** Define Gamma/Beta function, **(k)** , **(l)** Write down the suitable trigonometric substitution.

(m) Write down the property of definite integral regarding odd/even function.

**2.** Answer the followings:

1. For the given integralwith, where *n* is the subintervals, estimate the value of the integral using **Riemann sum** or **Trapezoidal rule**. (4)
2. Sketch the region bounded by the curveand theaxis. Also find its area. (4)
3. Evaluate using integration by parts/trigonometric substitution/trigonometric formula/partial fraction. (12)
4. Evaluate the integral using Gamma or Beta functions. (6)
5. Sketch the region bounded by the curves . Find the volume of solid generated by revolving the region about the axis. (4)