Show all your work. Due May 5th, 2017.

Name:
Student ID:

1. (**Riemann sum** S_n)
   Calculate the Riemann sum S_n for the function $f(x) = 1 - x^2$ on $[-5, 5]$, where the partition is obtained by partitioning $[-5, 5]$ into five subintervals of equal length and sample points are $c_1 = -4, c_2 = -1, c_3 = 1, c_4 = 2, c_5 = 5$.

2. (**Properties of definite integrals**)
   If $\int_0^2 f(x)dx = 2$, $\int_2^3 f(x)dx = \frac{10}{3}$, and $\int_0^2 g(x)dx = 3$, find
   (A) $\int_0^3 f(x)dx$
   (B) $\int_0^2 (2f(x) - 11g(x))dx$

3. (**Derivative versus indefinite integral**) Find the derivative or indefinite integral of the followings:

(A) $\frac{d}{dx}\left(\int e^{-x^2}dx\right)$

(B) $\int \frac{d}{dx}\left(\sqrt{4+5x}\right)dx$

4. (**Evaluate definite integrals**) (A) $\int_1^1 (x+1)^9 dx$

(B) $\int_0^9 (4-t^2)dt$

(C) $\int_{10}^{20} 5dx$

(D) $\int_{-1}^1 \sqrt{1+x}\,dx$