1. All problems from Exams 1-3 and Exams 1-3 review problems.

2. Suppose a stone is thrown vertically upward from the edge of a cliff with an initial velocity of 64 ft/s from a height of 30 ft above the ground. The height \( s \) (in feet) of the stone above the ground \( t \) seconds after it is thrown is \( s = -16t^2 + 64t + 30 \).
   a. Determine the velocity \( v \) of the stone after \( t \) seconds.
   b. When does the stone reach its highest point?
   c. What is the height of the stone at the highest point?
   d. When does the stone strike the ground?
   e. With what velocity does the stone strike the ground?

3. (3.10 #45) (This problem was solved in my lecture note.)

4. Find a Riemann sum of the function \( x^2 \) on the interval \([0, 2]\), consisting of four subintervals.

5. For the function \( f(x) = x^2 - 2x \), find numbers \( c_1, c_2 \) in the interval \([1, 3]\) such that (a)
   \[
   \frac{f(3) - f(1)}{3 - 1} = f'(c_1)
   \]
   (b)
   \[
   f(c_2) = \frac{1}{3 - 1} \int_1^3 f(x) \, dx
   \]

6. Evaluate the integral
   \[
   \int_{-1}^3 |x^2 - x| \, dx
   \]

7. (5.5 p. 364) #19, #23, #25.

8. Evaluate
   \[
   \int \sin^3 4x \cos 4x \, dx
   \]