235 Group Quiz 10   **Name**   **Section**

November 18, 2010

Work in groups but do NOT split up problems or tasks. You must discuss each problem as a group and agree on a final answer. Hand in one quiz per group. You may use your class notebooks but no other materials or technology. Please keep your discussions quiet.

1.   The following three problems concern the area between the graph of $f(x) = 3x - 1$ and the x-axis on the interval $[0, 1]$.

   a) Use definite integral formulas for $\int_a^b c \, dx$ and $\int_a^b x \, dx$ to calulate the exact value of this area.

   b) Write down a formal limit of Riemann sums that expresses this area, and then calculate this limit of sums to obtain the exact value of the area.

   c) Use properties of definite integrals and the formulas from part (a) to calculate the unsigned area between the graph of $f(x)$ and the x-axis, in other words to calculate $\int_0^1 |3x - 1| \, dx$.