Math 1451, Honor Calculus Practice 8, Spring 2016.

March 23, 2016

PSID: _____   Name: _____

1. Use the Midpoint Rule with $m = n = 2$ to estimate the value of the integral

$$\iint\limits_{R} (x - 3y^2)dA$$

   where $R = \{(x, y) | 0 \leq x \leq 2, 1 \leq y \leq 2\}$

2. (a) Before evaluating the integrals, do you think that the outcomes will be equivalent? Why?

   (b) Evaluate the iterated integrals

$$\int_0^3 \int_1^2 x^2 y \, dydx \text{ and } \int_1^2 \int_0^3 x^2 y \, dxdy$$

3. Estimate the volume of a solid that lies above the square $R = [0, 2] \times [0, 2]$ and below the elliptic paraboloid $z = 16 - x^2 - 2y^2$. Divide R into four equal squares and choose the sample point to be the upper right corner of each square R_{ij}.

4. Find the volume of the solid that is bounded by the elliptic paraboloid $x^2 + 2y^2 + z = 16$, the planes $x = 2$ and $y = 2$, and the three coordinate planes. Compare this to your answer in problem 3.