MA 302: Review 3   **Name:**_____

This review concerns integration over regions in a plane. You may wish to review this concept in a Calculus 2 book or in sections 5.1 - 5.3 of our text. Answer these questions on a separate sheet of paper.

(1) Let R be the rectangle $[0,2] \times [1,4]$ in $\mathbb{R}^2$. Let $f(x,y) = x^2 + y^2$. Compute $\iint\limits_R f \, dA$.

(2) Let T be the triangle between the x-axis, y-axis, and line $y = -x + 1$. Let $f(x,y) = xy$. Compute $\iint\limits_T f \, dA$.

(3) Suppose that R is a rectangle in the plane and that $f : R \to \mathbb{R}$. What conditions guarantee that $\iint\limits_R f \, dA$ exists. (Hint: see Theorem 2.5 on page 295).

(4) Summarize Fubini's theorem.