

Math 323  
Extra Credit 2  
5 points

Name: \_\_\_\_\_

**Due: Monday, May 9th**

Let  $R$  be a plane region with area  $A$  whose boundary is a piecewise smooth simple closed curve  $\mathcal{C}$ . Use Green's Theorem to prove that the centroid  $(\bar{x}, \bar{y})$  of  $R$  is given by:

$$\bar{x} = \frac{1}{2A} \oint_{\mathcal{C}} x^2 dy, \quad \bar{y} = -\frac{1}{2A} \oint_{\mathcal{C}} y^2 dx$$