

**Math 225: Calculus III**

**Quiz 9** Apr. 8/10, 1997

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

Section: \_\_\_\_\_

1. Let  $R$  be the region in the first quadrant defined by

$$\begin{aligned} 1 &\leq 2x^2 - y^2 \leq 2 \\ 1 &\leq 2y^2 - x^2 \leq 2 \end{aligned}$$

Use the change of variables  $u = 2x^2 - y^2$ ,  $v = 2y^2 - x^2$ , to transform the integral of  $f(x, y) = xy$  into an iterated integral in  $u$  and  $v$ . (You do not need to evaluate the integral, but you should simplify your answer.)

2. Let  $C$  be the curve  $y = x^2$  from  $0 \leq x \leq 1$ . Evaluate the line integral of  $f(x, y) = \sqrt{y}$  over the curve  $C$ .