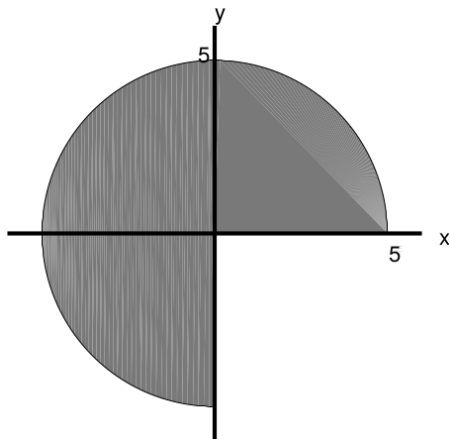Name: _____

Quiz #9

In class. 25 minutes. No textbook or notes or calculator. 30 points total.

1. **(a)** (*5 pts*)   Sketch the region whose area is given by the integral.

$$\int_{\pi/4}^{3\pi/4} \int_{1}^{2} r \, dr \, d\theta$$

(b) (*5 pts*)   Evaluate the integral in part **(a)**.

2. (*5 pts*)   A region R is shown. Set up an iterated integral in polar coordinates to compute $\iint_R f(x,y) \, dA$. (Assume $f(x,y)$ is any continuous function on R.)

3. (*5 pts*) Set-up, <u>but do not evaluate</u>, an iterated integral in polar coordinates to compute

$$\iint_D (2x - y)\, dA$$

where D is the region in the first quadrant enclosed by the circle $x^2 + y^2 = 4$ and the lines $x = 0$ and $y = x$.

4. (*10 pts*) Find the volume of the given solid, by setting-up <u>and</u> evaluating a double integral, under the surface $z = xy$ and above the triangle with vertices $(1, 1)$, $(4, 1)$, and $(1, 2)$. (*Hint.* Do not use polar coordinates.)