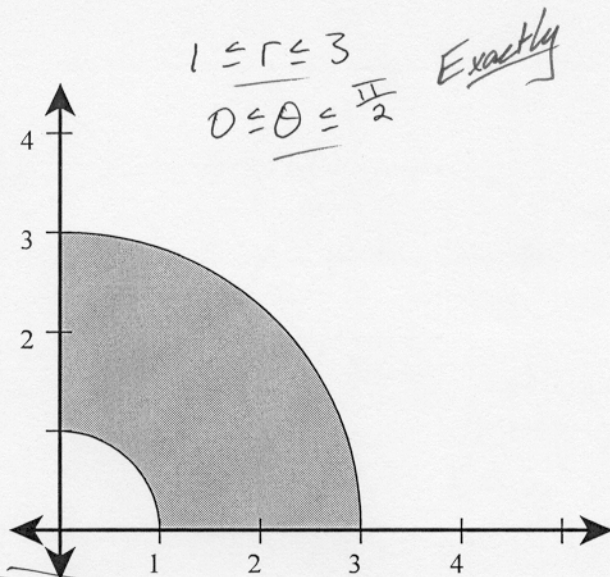Each problem is worth 5 points. Clear and complete justification is required for full credit.
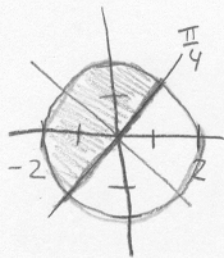
1. <u>Write</u> $\int_R f\, dA$ as an iterated integral for the region R shown below:

$1 \le r \le 3$

$0 \le \theta \le \frac{\pi}{2}$ Exactly

$$\int_0^{\frac{\pi}{2}} \int_1^3 f\, r\, dr\, d\theta$$

2. Carefully sketch the region of integration represented by the integral $\int_{\pi/4}^{5\pi/4} \int_0^2 4r^3\, dr\, d\theta$.

It is a part of a circle with radius of 2 centered at (0,0) going from $\frac{\pi}{4}$ to $\frac{5\pi}{4}$. So it is a semicircle.

Excellent!