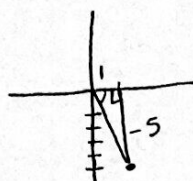# Quiz 19

Show all work and circle your final answer.

1. (4 points) Find two different polar coordinates of the Cartesian coordinate $(1, -5)$.

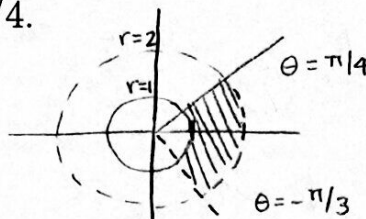$r = \sqrt{1^2 + (-5)^2} = \sqrt{26}$

$\theta = \arctan(-5)$ (NOTE: This is a negative angle)

$\boxed{(\sqrt{26}, \arctan(-5)), (\sqrt{26}, \arctan(-5) + 2\pi)}$

2. (4 points) Sketch the region given by the polar inequalities $1 \leq r < 2$, $-\pi/3 < \theta \leq \pi/4$.

$r=2$
$r=1$
$\theta = \pi/4$
$\theta = -\pi/3$

3. (5 points) Find a Cartesian equation for the curve $r^2 \sin\theta = 1$.

We know $r^2 = x^2 + y^2$, $x = r\cos\theta$, $y = r\sin\theta$ (by ...).
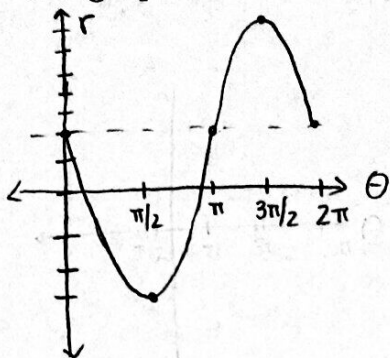
$r = \pm\sqrt{x^2 + y^2}$

$r^2 \sin\theta = 1$
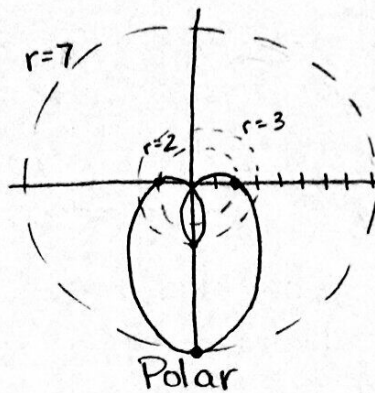
$r \cdot r\sin\theta = 1$

$\boxed{\pm\sqrt{x^2 + y^2} \cdot y = 1}$

4. (5 points) Sketch the polar curve $r = 2 - 5\sin\theta$ by first sketching the graph of r as a function of θ in Cartesian coordinates.

Cartesian

Polar

5. (2 points) What are you most worried about for the final exam? What are you going to do about it?

Answers will vary.

Solutions to the second question may include:
- study
- visit office hours
- visit SI
- review past exams / textbook problems
- set up a meeting with an instructor