Quiz 9 **Name:** _____

Paramteric Equations and Partial Derivatives

Math 408D:

Instructor: Athil George

Problem 1. Consider the polar equation:

$$r = \frac{\gamma}{\alpha \sin(\theta) + \beta \cos(\theta)}$$

Show that this curve represents a line. Write in the form $y = Ax + B$, where A and B would be in terms of the constants γ, α, and β.

Problem 2. Consider the general form of the polar equation from your HW:

$$r(\theta) = \cos(k\theta)$$

1. Trace the curve when $k = 2$ from $0 \leq \theta \leq 2\pi$.
2. Trace the curve when $k = 3$ from $0 \leq \theta \leq 2\pi$.

Below is a the unit circle to help you.

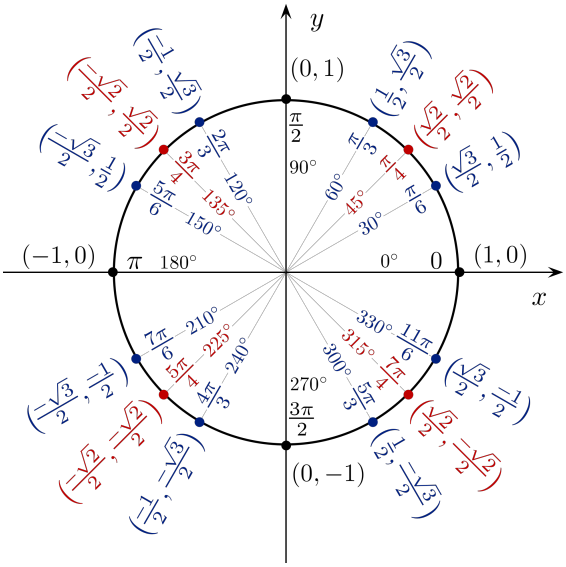

Figure 1: Unit Circle

Bonus: Complete the following statement.

From the interval $0 \leq t \leq 2\pi$, the Cartesian graph representing $r = \cos(k\theta)$ has ____ number of clovers when k is odd and ____ number of clovers when k is even.