MATH 53

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GSI: Theo Johnson-Freyd
http://math.berkeley.edu/~theojf/

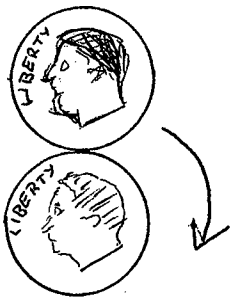
(1) On your homework, you parameterize an ellipse

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$

[Hint: the circle $x^2+y^2=1$ satisfies $x=\cos\theta$, $y=\sin\theta$.]

What is a parameterization of an ellipse centered at (h,k):

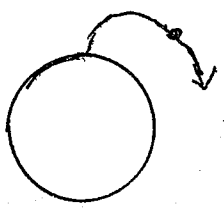
$$\frac{(x-h)^2}{a^2} + \frac{(y-k)^2}{b^2} = 1 \ ?$$



(2) Start with two dimes touching, and, holding the bottom fixed, roll the top around the bottom.

(a) How many times does the moving dime rotate before it returns to its starting location?

(b) What is the path taken by the point on the moving dime that starts out touching the stationary dime?



$(x,y) = (f(t), g(t)) = ?$