

Back to question:  
does a rational point on  
 $x^2 + y^2 = 1$  give a pyth. trip?

i.e.  $x = \frac{a}{b}$ ,  $y = \frac{c}{d}$ , with  
 $a, b, c, d \in \mathbb{Z}$   
 $b, d \neq 0$

and  $\left(\frac{a}{b}\right)^2 + \left(\frac{c}{d}\right)^2 = 1$ .

But then

$$a^2 d^2 + c^2 b^2 = (bd)^2$$

$$(ad)^2 + (cb)^2 = (bd)^2$$

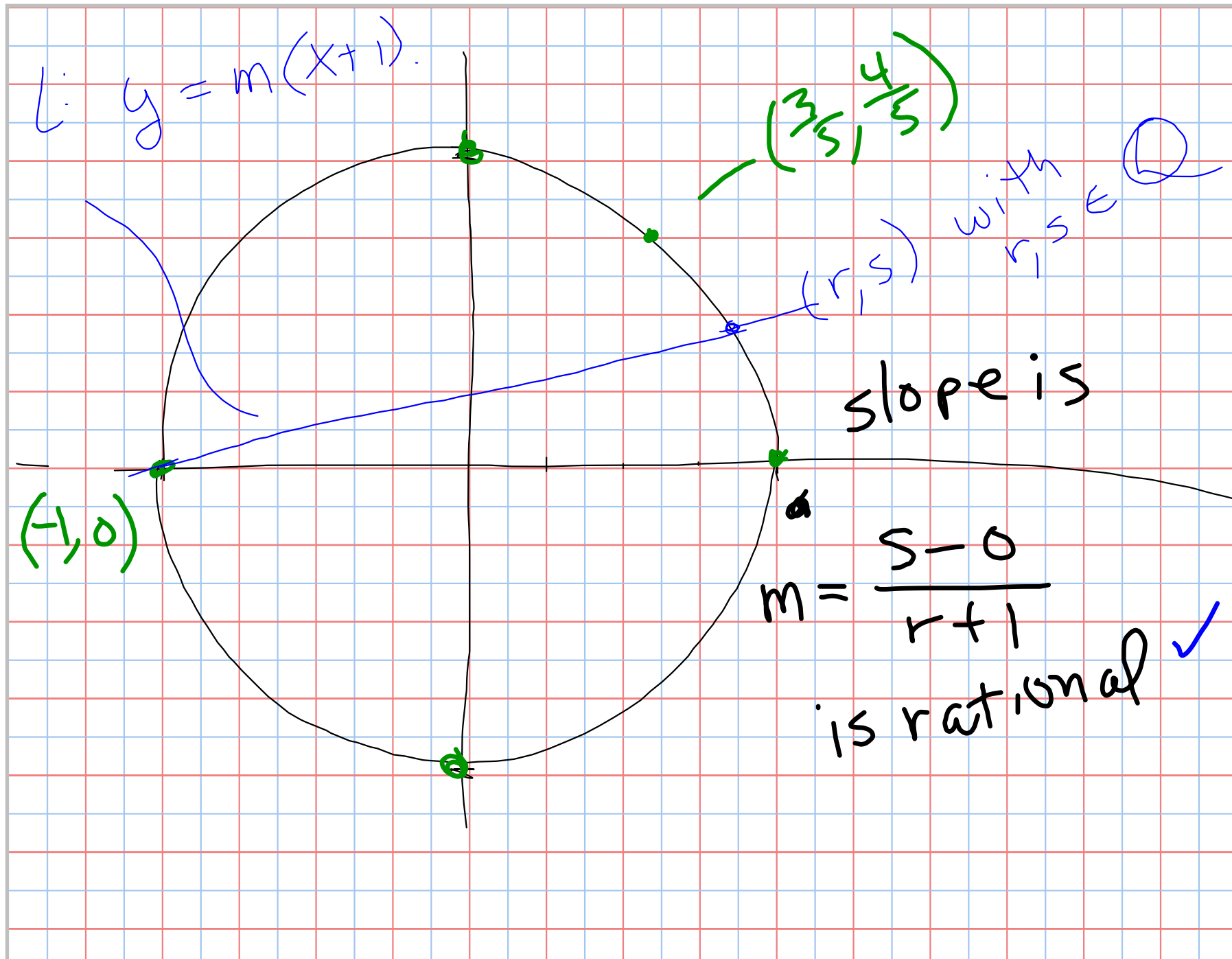
This gives a pyth trip

$$(|ad|, |cb|, |bd|)$$

Thus

get pythag trip  $\Leftrightarrow$  get  
rational pt  
on unit circle.

So lets go look for  
rational points on the unit circle



thus pyth trip  $\iff$  ration points  
 $\iff$  lines from  $(-1, 0)$  with  
rational slopes



So to find pyth trips,

find intersection of  
circle and line

So solve

$$y = m(x+1)$$

(m rational)

and

$$x^2 + y^2 = 1$$