

So solve

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

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

where m is
rational

$$x^2 + (m(x+1))^2 = 1 \quad \& \text{ solve}$$

$$(1+m^2)x^2 + 2m^2x + m^2 - 1 = 0$$

quad. formula:

$$X = \frac{-2m^2 \pm \sqrt{4m^4 - 4(1+m^2)(m^2-1)}}{2(1+m^2)}$$

$$X = \frac{-m^2 \pm 1}{m^2 + 1}$$

$$X = \frac{1-m^2}{1+m^2} \quad \text{or} \quad -1 = \frac{-(m^2+1)}{m^2+1} = -1$$

So if $x = -1$, $y = 0$

and if $x = \frac{1-m^2}{1+m^2}$, get

$$y = \frac{2m}{1+m^2}$$

So rational point is

$$\left(\frac{1-m^2}{1+m^2}, \frac{2m}{1+m^2} \right) \text{ for } m = \frac{v}{u} \text{ (rational)}$$

original question —

we know the point (x, y) , how
do we get the pyth. trip. (a, b, c)

(take $m = \frac{v}{u}$ + figure out)
