

1-Find few pairs (x, y) that satisfy this equation $3x + y = 0$

Draw the pairs on the plane , connect them together, see what you will get.

2-Do the same for the equation $x - 2y - 1 = 0$

3- Find few pairs (x, y) that satisfy the equation $x^2 - y = 0$,
Draw them on the plane and see what you get.

4- Now find pairs (x, y) satisfying the above equation and such that x and y are
RATIONAL.

5-Try to find integers x, y, z such that $x^2 + y^2 = z^2$
(so we are looking for triples (x,y,z) that satisfy Pythagorean property)

6- Let's make sure we know what is the graph of this equation $x^2 + y^2 = 1$
(so again find a few points satisfying the equation and draw it)

7- Divide each triple (x,y,z) that you got in problem 5 by z^2 .
Are they related to the equation $x^2 + y^2 = 1$?

8- Now consider the following rational points: $(16/65, 63/65)$ and $(20/29, 21/29)$

a-Check if they are on the circle or not.

b-Then using these two points, try to find two triple (x,y,z) that satisfy the Pythagorean property.

Which equation represents an elliptic curve? Why?

a- $y^2 = x(x-1)(x+1)$

b- $y^2 = x^2(x-1)$