Drawing some curves: help for helpers

1. It is hard to explain this in words but it is easy to do. They move the set square down, keeping the top right-hand corner on the vertical line and keeping the side opposite that corner going throughthe fixed point (marked with a cross). The midpoint of the right-hand side traces out the curve. They will probably find this easiest if they just draw a point, adjust the set square and draw another point, and then join the dots when they have enough. If you try to draw it in one continuous movement you always drop the set square on the floor!

This will only give them the top half of the curve. For the bottom half they have to turn the set square over and do it again.

2. Instead of making a mark half-way along the edge of the set square, I suggest they try making marks one-quarter of the way along from each end. Of course the practialities are exactly the same. But the top mark, one-quarter of the way down, traces out a curve like a wave, and the other one, three-quarters of the way down, goes right round in a loop and the curve crosses over itself. The ivy-leaf curve, with its sharp point, is between these two: you can think of the point as a very sharp wave or a very small loop.

3. You have drawn three curves now. Would you say they all look the same? If not, what is different about them?

The thing that is different is of course that some of the curves cross themselves or have something else funny happen and some don't. And that's what I'll talk about next.