

## Staircase or Spiral?

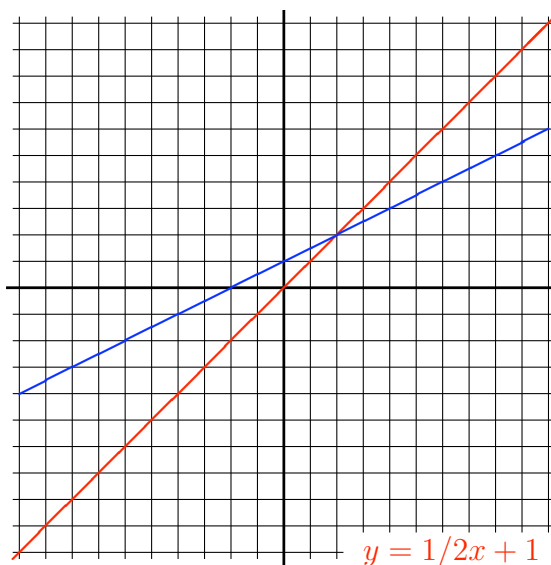
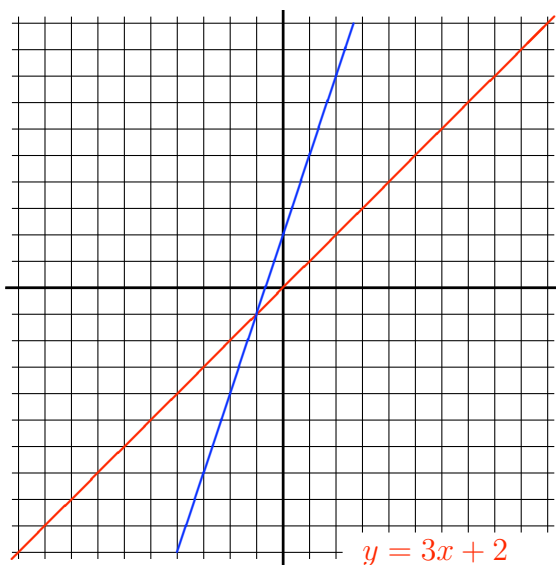
In this exercise you will repeat a process that produces a path between two lines. One line is of the form  $y = mx + b$  and the other will always be  $y = x$ . When you repeat the algorithm given below the path will either staircase or spiral about the two lines. One of the purposes of this exercise is to become familiar with iterations (a repeated process), which is used to produce many fractals. The other is to become comfortable with the two parameters of a line. This will help you to recognize a relationship between the parameters and the cases in which the algorithm produces a staircase or a spiral.

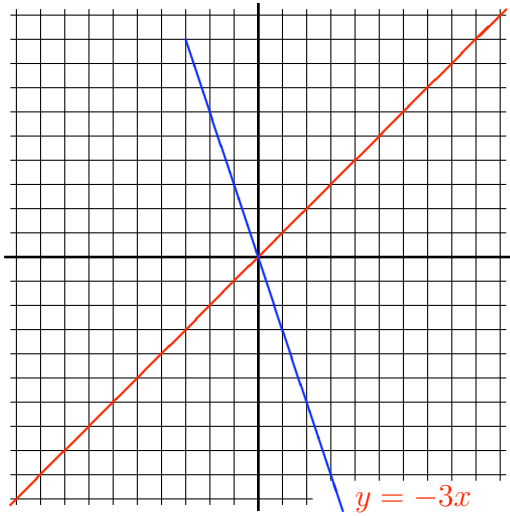
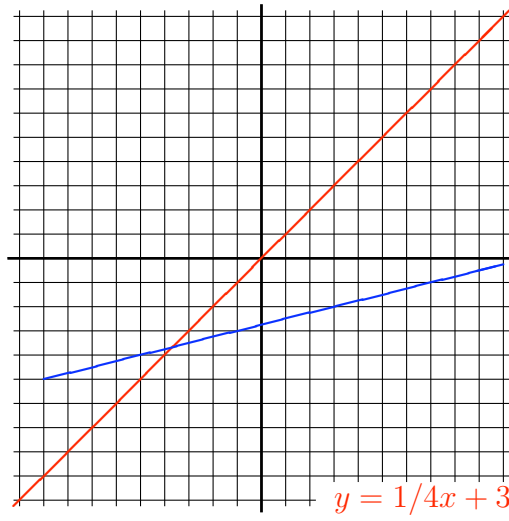
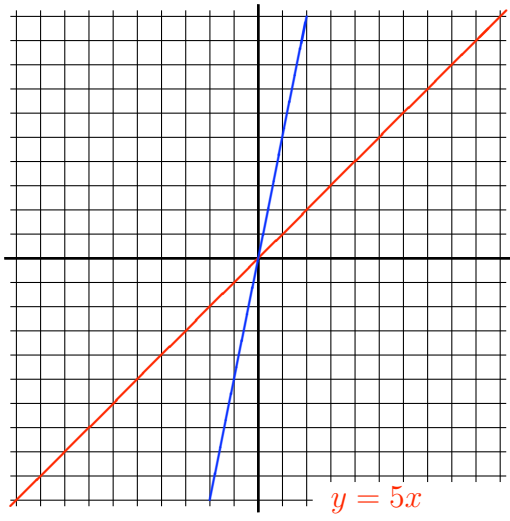
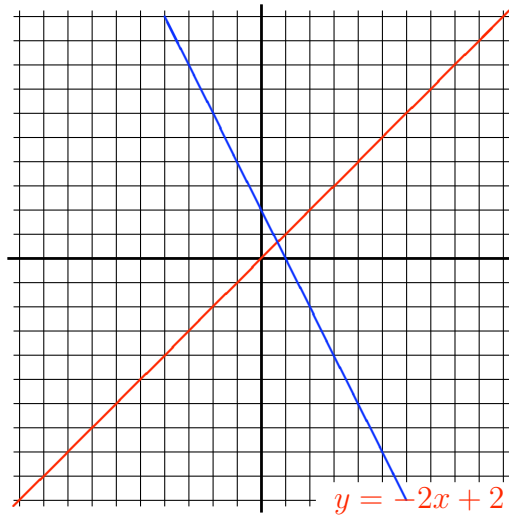
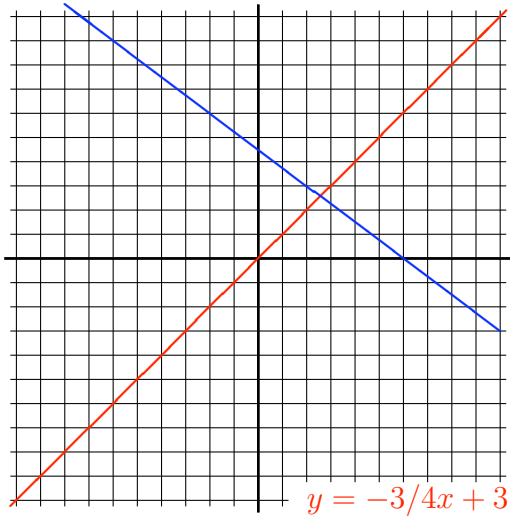
### The Rules

To begin this exercise we first choose a point on the x-axis.

Step 1 From your current point draw a path either up or down to the line  $y = mx + b$ . Move to Step 2.

Step 2 From your current point draw a path either left or right to the line  $y = x$ . Move to Step 1.





After working with several different lines can you tell which parameter may effect the staircasing or spiraling of the path?

Are there any other patterns you notice about the parameter?

## Staircase or Spiral?

## The Rules

To begin this exercise we first choose a point on the x-axis.

Step 1 From your current point draw a path either up or down to the line. Move to Step 2.

Step 2 From your current point draw a path either left or right to the diagonal. Move to Step 1.

