

Introduction

Wednesday, 22 January 2020 8:49 pm

- ★ By the end of the lesson I would hope that you have an understanding and be able to apply to questions the following concepts:
- Know about and understand the circle of transformation
 - Know which transformation to use with a given (or calculated) scatter plot

RECAP:

This is a brand new topic for Further Mathematics but builds on the work done previously on least squares regression lines and analysis.

Not all data is linear!



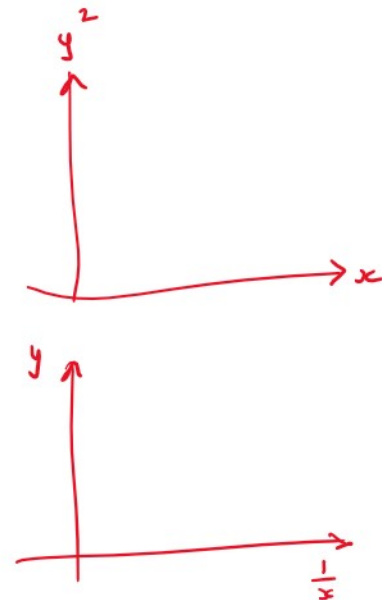
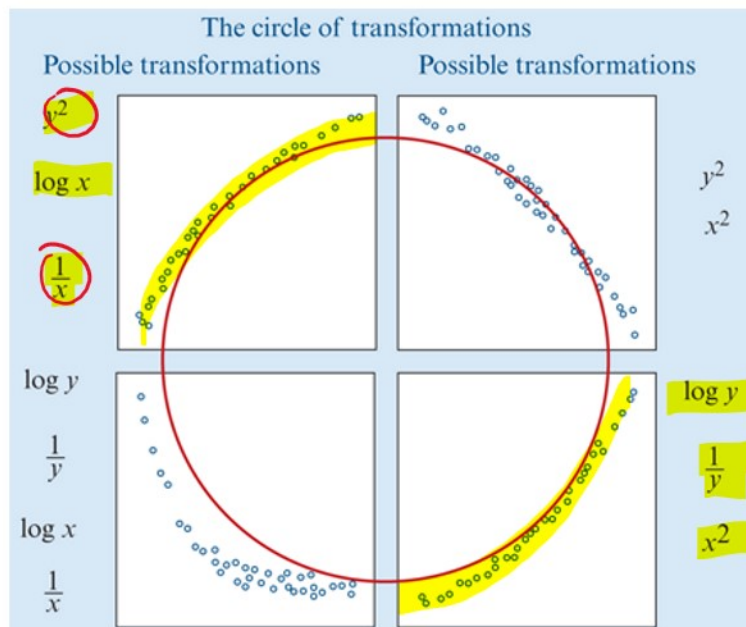
I know.
World ending right!

Actually, not **that** world ending.

As with all things, we can, with a little knowledge and a little bit more Mathematics, turn even the most curved of data into a straight line! All we need to know is a simple circle.

The circle of transformations

This is another very important diagram to place into your summary books (in Australia!)



How does it work?

In its simplest form, the circle of transformation gives us some ideas of what might work to turn our curved data into a straight line.

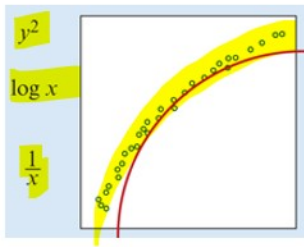
Firstly we need to decide if the data we have been given is linear or not. If it's linear then we won't need to use this as we go back to the regression analysis work from the previous lessons.

If it curves, then we need to decide which way it seems to be curving.

previous lessons.

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For example:

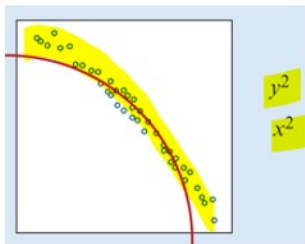


If the data appears to be curving as shown on the left, we have three possible **data transformations** open to us. They are:

- y^2 transform
- $\log x$ transform
- $\frac{1}{x}$ transform

As you can see, there is more than one you might use. Which one you use will be explained in a later lesson

If the data curves in another way, you will have a different three transforms you might be able to try to turn the curved data straight.



If the data appears to be curving as shown on the left, we have only two possible **data transformations** open to us. They are:

- y^2 transform
- x^2 transform

Notice how the y^2 transform appears in both of these examples.

Now we know about the circle of transformations, we can use them to start answering some questions!