**NON-LINEAR**

An experiment is conducted to determine the relationship between initial speed and stopping distance of automobiles. A sample of twelve cars is tested and the following data are recorded:

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Initial speed in mph (x) | 20 | 20 | 30 | 30 | 40 | 40 | 50 | 50 | 60 | 60 | 70 | 70 |
| Stopping distance in ft (y) | 15.9 | 24 | 41.2 | 58.7 | 74.8 | 88.8 | 112.6 | 127.6 | 216.4 | 200 | 276.8 | 301 |

1.       Draw the scatterplot of this data. Observe that the shape is not linear. How can you best describe the shape?

2.       Create a new set of data using the transformation y' = sqrt(y). In other in the above table keep the x values the same and replace the y values by y' values.

3.       Draw a scatterplot of this data. What can you say about the shape of this scatterplot?

4.       Find the linear equation that best describes the relationship between x and y'

5.       Replace the y' in this equation by sqrt(y) and solve the resulting equation for y.

6.       Write a brief conclusion.

1. The most simplified form of

is

1. None of the above.
2. If

then

1. 3
2. 9
3. -1
4. None of the above.