

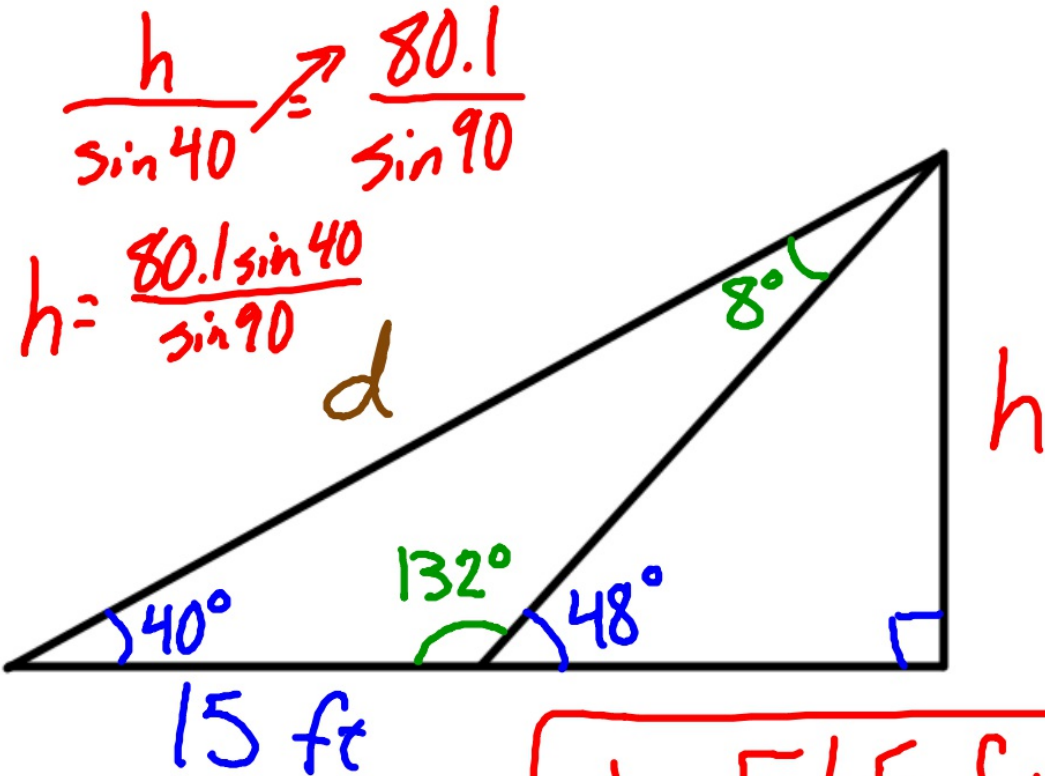
Warm Up

1) Callie wants to know how tall a tree is, she measures the angle of elevation to be 40° . She walks 15 feet closer and measures the angle to be 48° . How tall is the tree?

$$\frac{d}{\sin 132} = \frac{15}{\sin 8}$$

$$d = \frac{15 \sin 132}{\sin 8}$$

$$d = 80.1$$



$$\frac{h}{\sin 40} = \frac{80.1}{\sin 90}$$
$$h = \frac{80.1 \sin 40}{\sin 90}$$

$$h = 51.5 \text{ ft}$$

Unit 6: Statistics

Modeling Data with Regression Lines

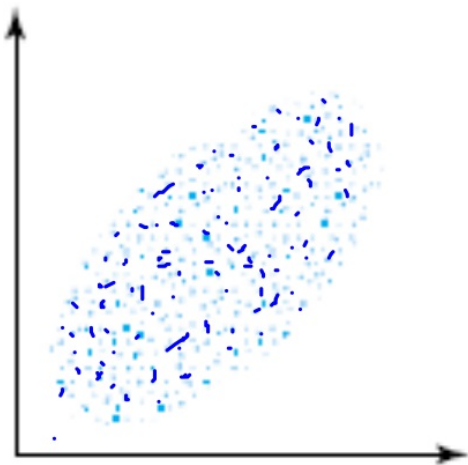
Definitions - Review

Correlation - relationship between two sets of data (positive, negative or no correlation)

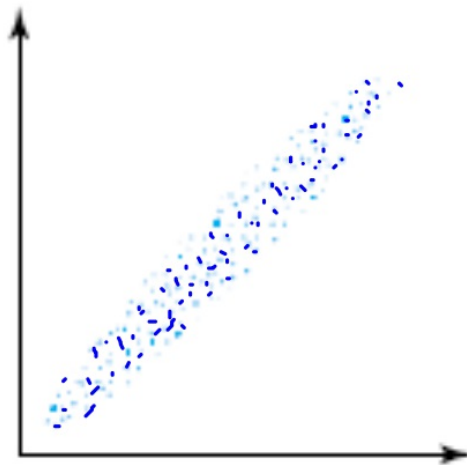
Correlation Coefficient - measurement of how well an equation fits data (from -1 to 1; 0 being no correlation)

Regression Line - equation that demonstrates the trends within data and allows for predictions

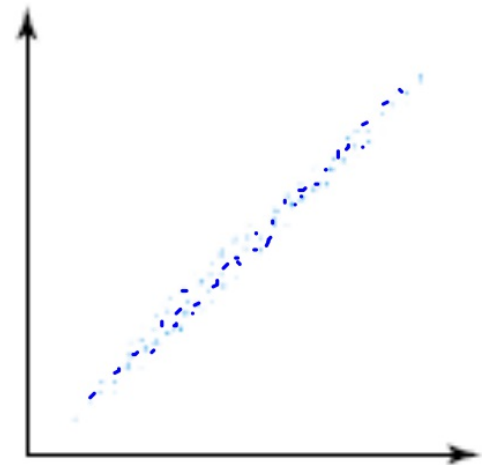
(line of best fit, best fit line, prediction line, linear model)



$0 < r \leq 0.5$
positive and weak

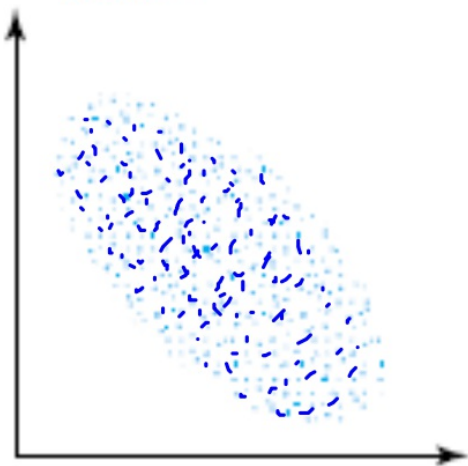


$0.5 \leq r \leq 0.75$
moderately positive

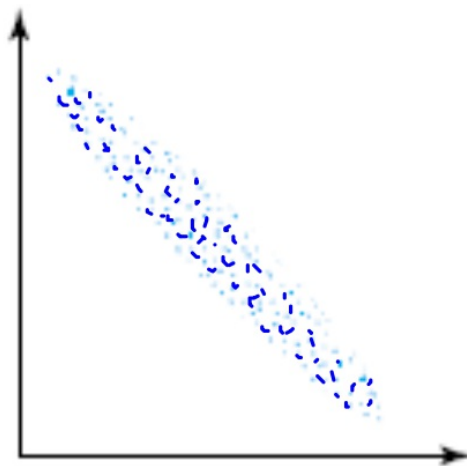


$0.75 \leq r \leq 1$
strongly positive

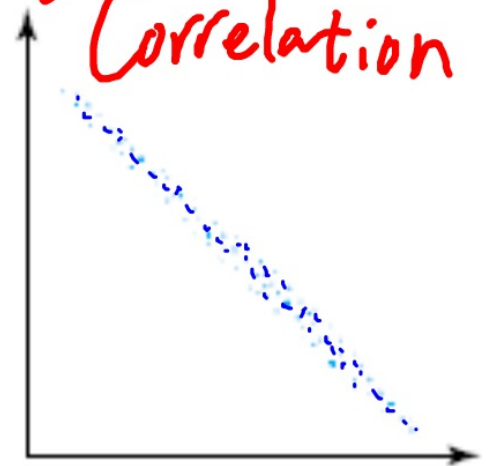
Closer data is to a line = Stronger Correlation



$-0.5 \leq r < 0$



$-0.75 \leq r \leq -0.5$



$-1 \leq r \leq -0.75$

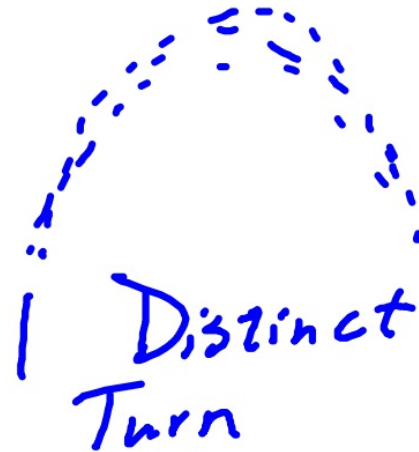


WB 601

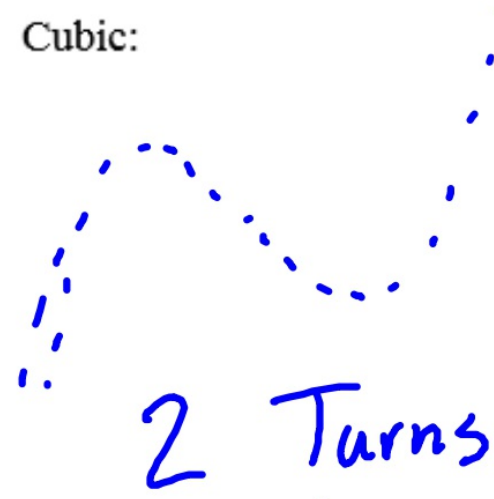
Linear:



Quadratic:

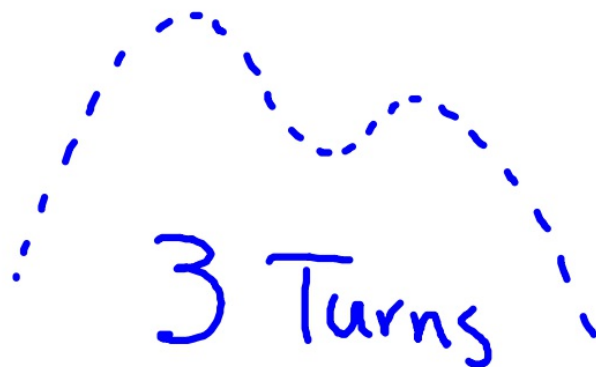


Cubic:

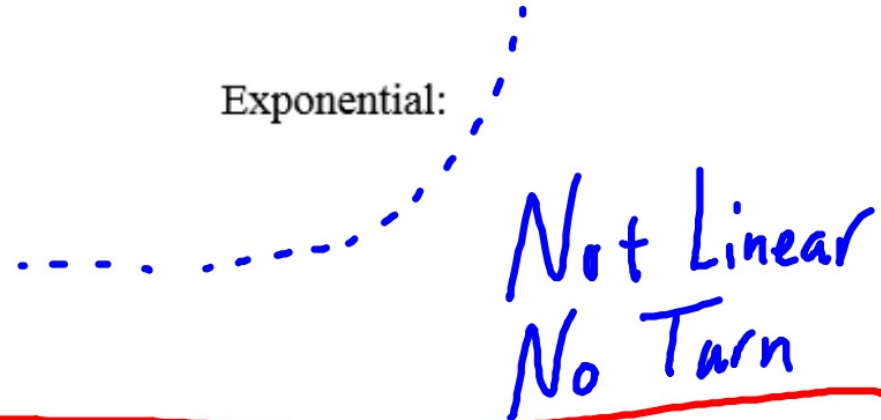


Quartic:

$$x^4$$



Exponential:



Power \rightarrow "Power" in the question
No need to check the
Scatter plot.

Steps for determining the best regression equation for given situations.

- 1) Enter the data into L1 and L2 in the STAT menu
- 2) Stat Plot → Turn the plot on to scatter plot → Zoom 9
- 3) From the shape of the plot choose the best match to the functions above
- 4) Stat → Calc → Choose the corresponding regression equation

Ex.

x	1	2	3	4	5	6	7
y	2	8	30	105	437	1588	6341

Exponential

$$y = 0.53 (3.81)^x$$

$$23,532.91$$