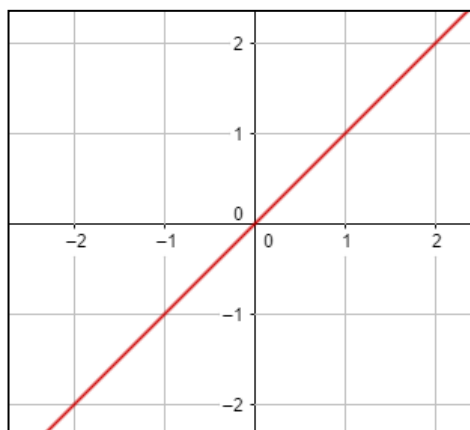


Linear, Quadratic and Exponential Models Guided Notes

A **linear model** represents a linear equation of the form:

$$f(x) = ax + b$$

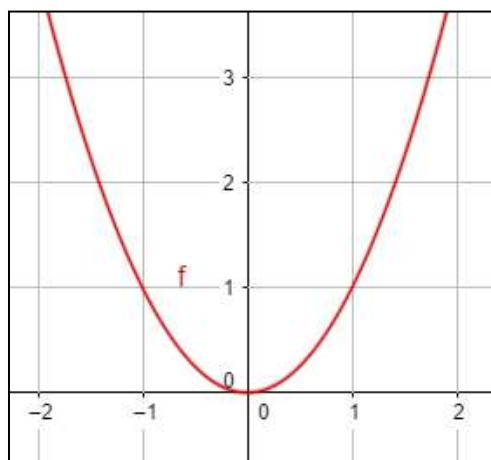
The graph of a linear model represents a straight line.



A **quadratic model** represents a quadratic equation of the form:

$$f(x) = ax^2 + bx + c$$

The graph of a quadratic model represents a parabola or a U shaped curve.

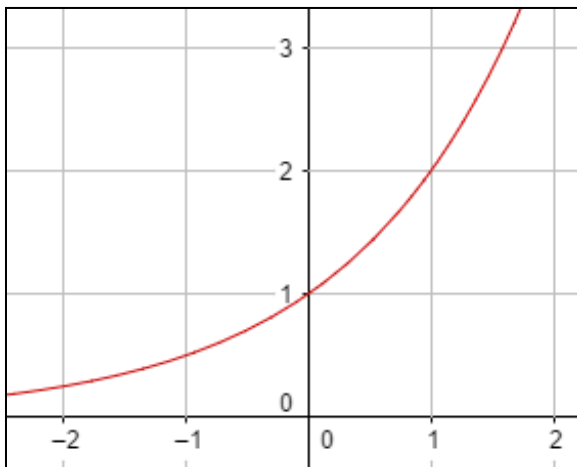


Linear, Quadratic and Exponential Models Guided Notes

An **exponential model** represents an exponential equation of the form:

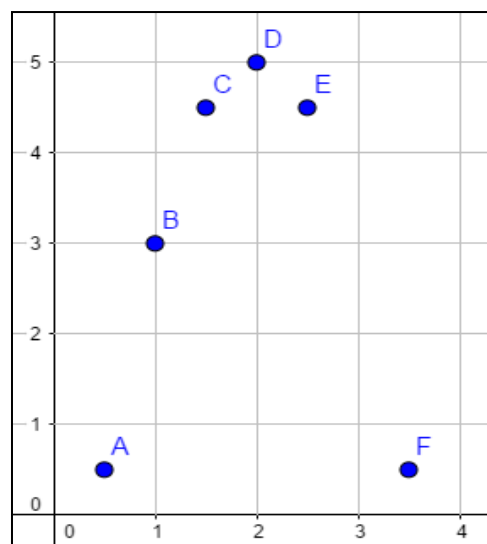
$$f(x) = a^x$$

The graph of an exponential model represents a decreasing or increasing curve.



Problem 1: Which model best represents the data set shown below?

$(0.5, 0.5)$, $(1, 3)$, $(1.5, 4.5)$, $(2, 5)$, $(2.5, 4.5)$, $(3.5, 0.5)$



Linear, Quadratic and Exponential Models

 Guided Notes

Choosing the Best Model

If we are given a table of x-y values, we can determine whether the table represents a linear, quadratic or exponential models by using the following rules:

- In a linear model, there is a constant difference between the y-values for each increase in value of x.
- In a quadratic model, there is a common difference between the differences of successive y-values.
- In an exponential model, the y-values have a common ratio.

Problem 2: Which kind of function best models the data represented in the table shown below?

x	y
1	3
2	5
3	7
4	9
5	11