Unit 4 Glossary Terms

Dependent variable

A variable representing the output of a function.

The equation $y = 6 - x$ defines y as a function of x. The variable x is the independent variable, because you can choose any value for it. The variable y is called the dependent variable, because it depends on x. Once you have chosen a value for x, the value of y is determined.

function

A function takes inputs from one set and assigns them to outputs from another set, assigning exactly one output to each input.

Independent variable

A variable representing the input of a function.

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Function notation

Function notation is a way of writing the outputs of a function that you have given a name to. If the function is named f and x is an input, then $f(x)$ denotes the corresponding output.

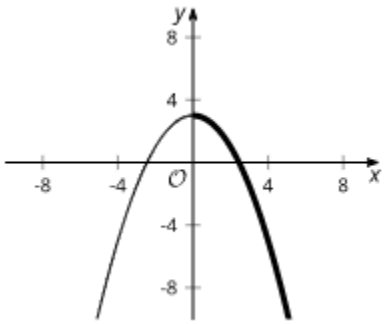
Linear function

A linear function is a function that has a constant rate of change. Another way to say this is that it grows by equal differences over equal intervals. For example, $f(x) = 4x - 3$ defines a linear function. Any time x increases by 1, $f(x)$ increases by 4.

decreasing (function)

A function is decreasing if its outputs get smaller as the inputs get larger, resulting in a downward sloping graph as you move from left to right.

A function can also be decreasing just for a restricted range of inputs. For example the function f given by $f(x) = 3 - x^2$, whose graph is shown, is decreasing for $x \geq 0$ because the graph slopes downward to the right of the vertical axis.



Horizontal intercept

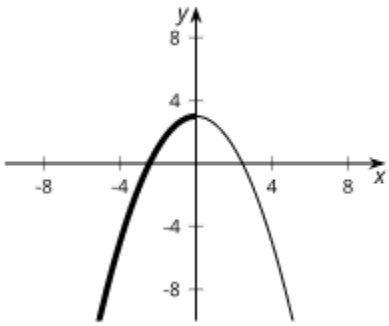
The horizontal intercept of a graph is the point where the graph crosses the horizontal axis. If the axis is labeled with the variable x , the horizontal intercept is also called the x -intercept. The horizontal intercept of the graph of $2x + 4y = 12$ is(6,0).

The term is sometimes used to refer only to the x -coordinate of the point where the graph crosses the horizontal axis.

Increasing (function)

A function is increasing if its outputs get larger as the inputs get larger, resulting in an upward sloping graph as you move from left to right.

A function can also be increasing just for a restricted range of inputs. For example the function f given by $f(x) = 3 - x^2$, whose graph is shown, is increasing for $x \leq 0$ because the graph slopes upward to the left of the vertical axis.



maximum

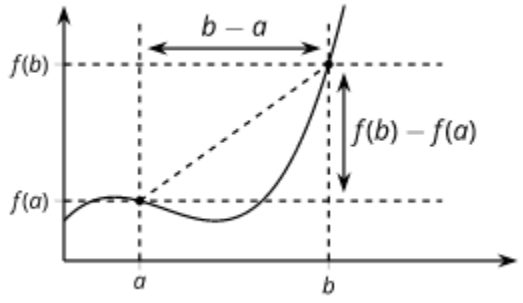
A maximum of a function is a value of the function that is greater than or equal to all the other values. The maximum of the graph of the function is the corresponding highest point on the graph.

minimum

A minimum of a function is a value of the function that is less than or equal to all the other values. The minimum of the graph of the function is the corresponding lowest point on the graph.

Average rate of change

The average rate of change of a function f between inputs a and b is the change in the outputs divided by the change in the inputs: $\frac{f(b)-f(a)}{b-a}$. It is the slope of the line joining $(a, f(a))$ and $(b, f(b))$ on the graph.



Vertical intercept

The vertical intercept of a graph is the point where the graph crosses the vertical axis. If the axis is labeled with the variable y , the vertical intercept is also called the y -intercept.

Also, the term is sometimes used to mean just the -coordinate of the point where the graph crosses the vertical axis. The vertical intercept of the graph of $y = 3x - 5$ is , (0,-5) or just -5.

Domain

The domain of a function is the set of all of its possible input values.

Range

The range of a function is the set of all of its possible output values.

Piecewise function

A piecewise function is a function defined using different expressions for different intervals in its domain.

Absolute value

The absolute value of a number is its distance from 0 on the number line.

Inverse (function)

Two functions are inverses to each other if their input-output pairs are reversed, so that if one functions takes a as input and gives b as an output, then the other function takes b as an input and gives a as an output.

You can sometimes find an inverse function by reversing the processes that define the first function in order to define the second function.