FUNCTIONS

Math 130 - Essentials of Calculus

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DEFINITION (FUNCTION)

A function is a rule that assigns to each input exactly one output.

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- The set of all possible output values is the *range* of the function.
- The symbol representing an arbitrary input to the function is called a *independent variable*.
- A symbol representing a number in the range of the function is called a *dependent variable*.

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A nursery sells potting soil for $0.40 *per pound, and the soil is available in* 4*lb,* 10*lb, and* 50*lb bags. If f(x) is the price of a bag of potting soil that weighs x pounds*

(A) *find and interpret the value of f(10).*

(B) *determine the domain and range of f.*

GRAPHING A FUNCTION

For a function $f(x)$ we graph it in a 2D-plane. For each number x in the domain of f, we set $y = f(x)$ and graph the point (x, y) in the plane where x is placed according to the horizontal axis and y is placed according to the vertical axis.

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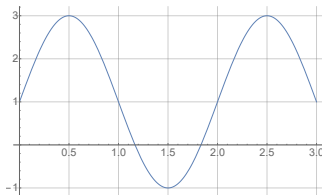
EXAMPLE

For the function $f(x)$ graphed above:

1. *what is $f(1)$? $f(2.5)$?*
2. *What are the domain and range of f?*

GRAPHING A FUNCTION

EXAMPLE

Graph the functions

1. $f(x) = x^2$ *on* $-2 \leq x \leq 2$
2. $g(t) = 2t - 1$ *on* $-1 \leq t \leq 3$