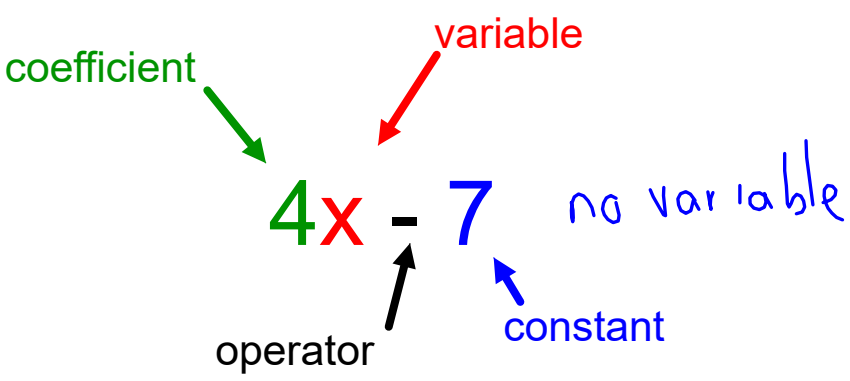
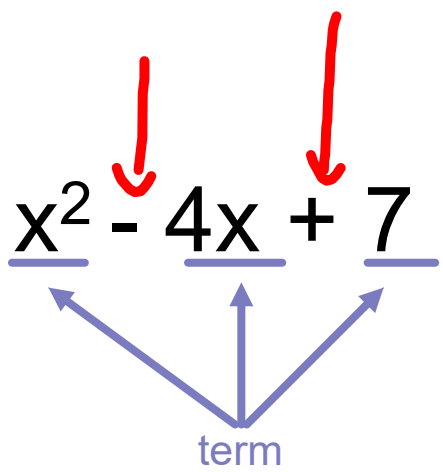
Vision 4.1

A polynomial is an algebraic expression composed of one or more terms.





Polynomials have different names depending on the number of terms they contain.

Polynomial	Number of terms	Name
5x	1	Monomial
6x – 1	2	Binomial
$x^2 - 4x + 7$	3	Trinomial

Trinomials

Examples	Non-examples
x^2+5x-3	$6x-1$
$x^{100}+7x^{10}+x$	$5x$
	7
	$-368x$
	$6669x$
	$x^7+x^6+x^5+x^4+x^3+x^2+x+1$

The degree of a polynomial function

examples of a polynomial function of degree 2	non - examples of a polynomial function of degree 2
x^2 $\quad 2x^2+x+1$	x^3 $\quad x$
$4x^2+7$	$x^5+x^4+x^3+x^2+x+1$
	x^7+2x^2

What is a possible definition for the degree of a polynomial function?

The degree of a polynomial functions corresponds to its largest exponent

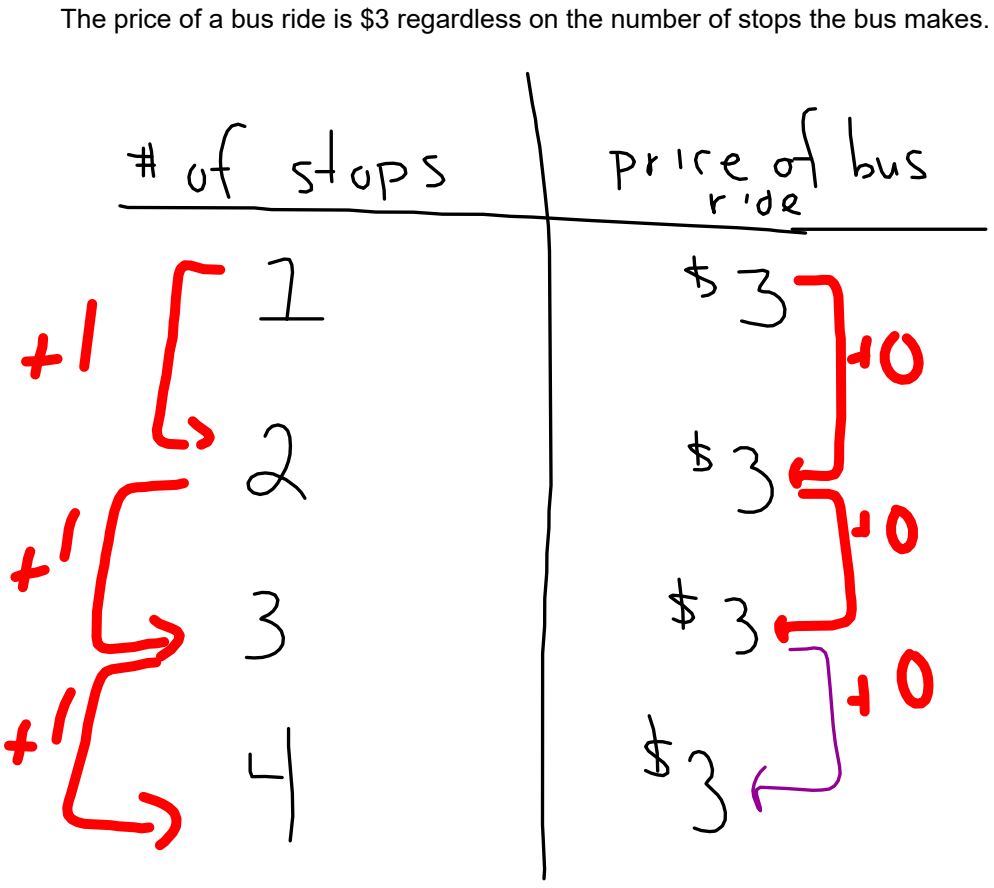
Polynomial Function of Degree 0

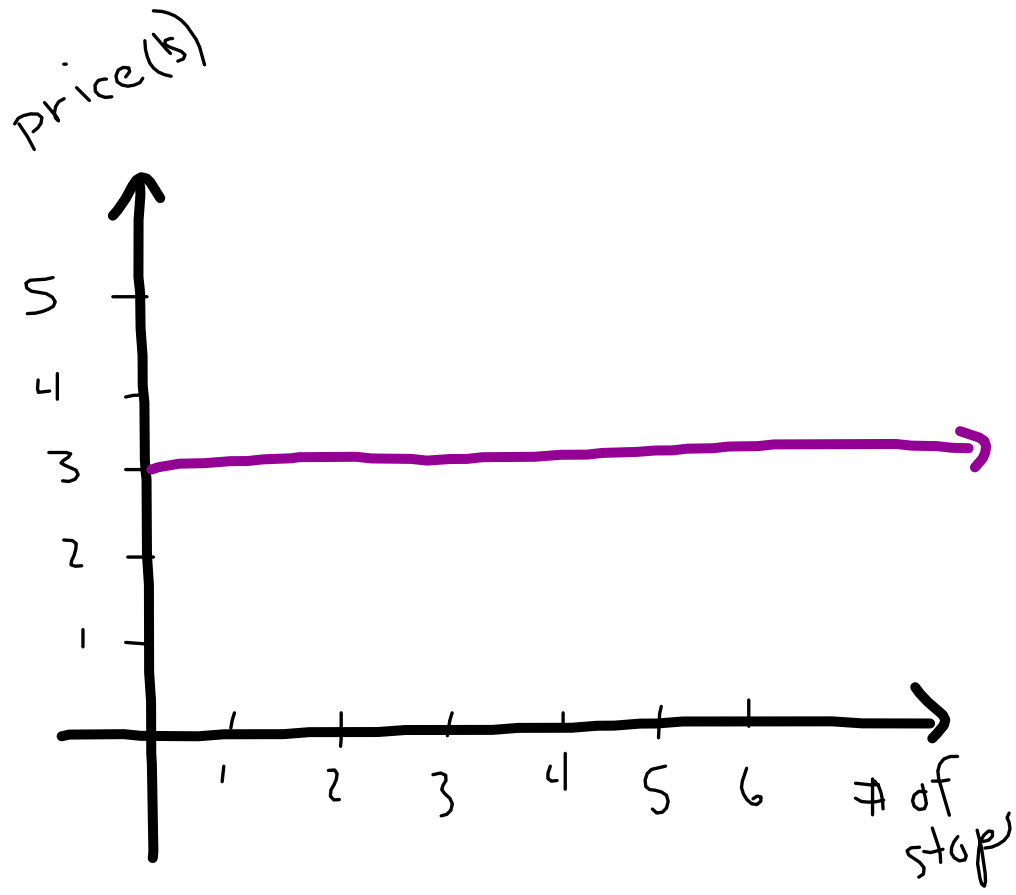
A constant function where a variation in the independent variable produces no variation in the dependent variable.

The rule of a polynomial function of degree 0 is expressed as f(x) = b or y = b, where b is a constant.

Example:

The price of a bus ride is $3 regardless on the number of stops the bus makes.





$y = 3$ or $f(x) = 3$

Polynomial Function of Degree 1

→ straight line

A polynomial function of degree 1 is a linear function where a constant variation in the independentvariables produces a constant non-zero variation in the dependent variable.

A polynomial function of degree 1 is called a **direct-variation function** o. Graphically, the line passes through the origin.

Example:

$C = 2\pi r$

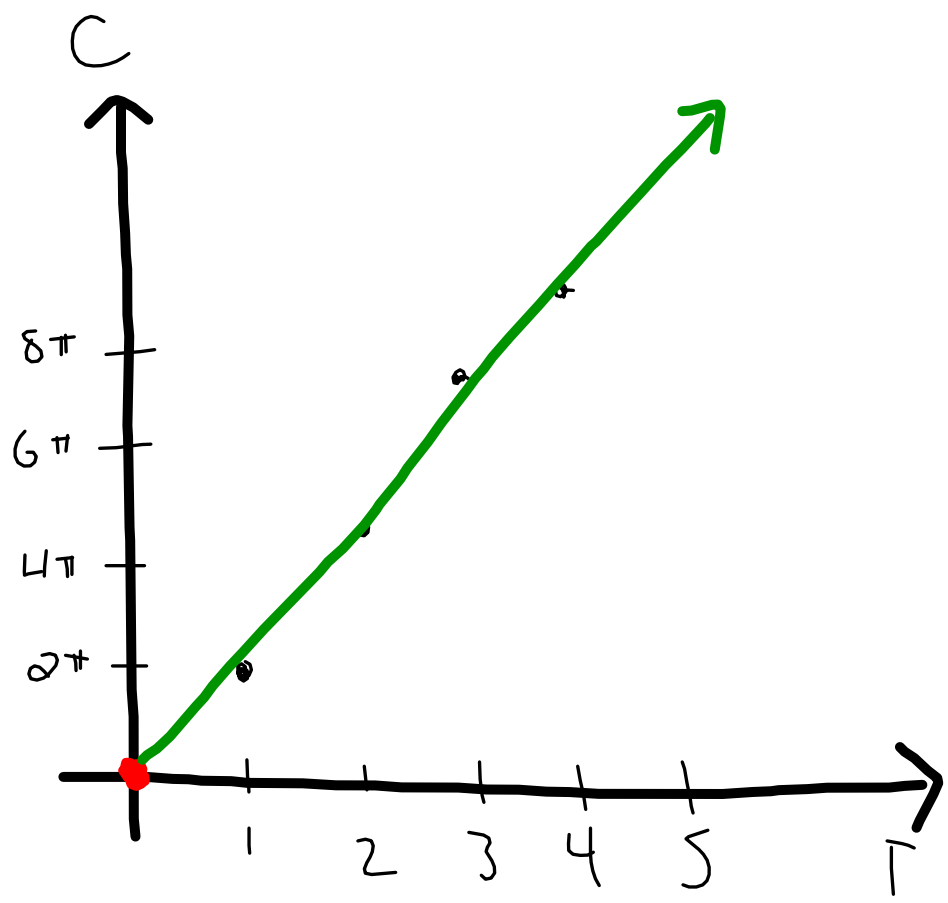
The circumference of a circle is dependent on the radius of the circle.

ind = radius

dep = circumference

radius	circumference
0	0
1	$2\pi(1) = 2\pi$
2	$2\pi(2) = 4\pi$
3	6π
4	8π

+1, +1, +1, +1; +2π, +2π, +2π



A polynomial function of degree 1 is called a **partial-variation functio** -zero value.

Graphically, the line does not passes through the origin.

Example:

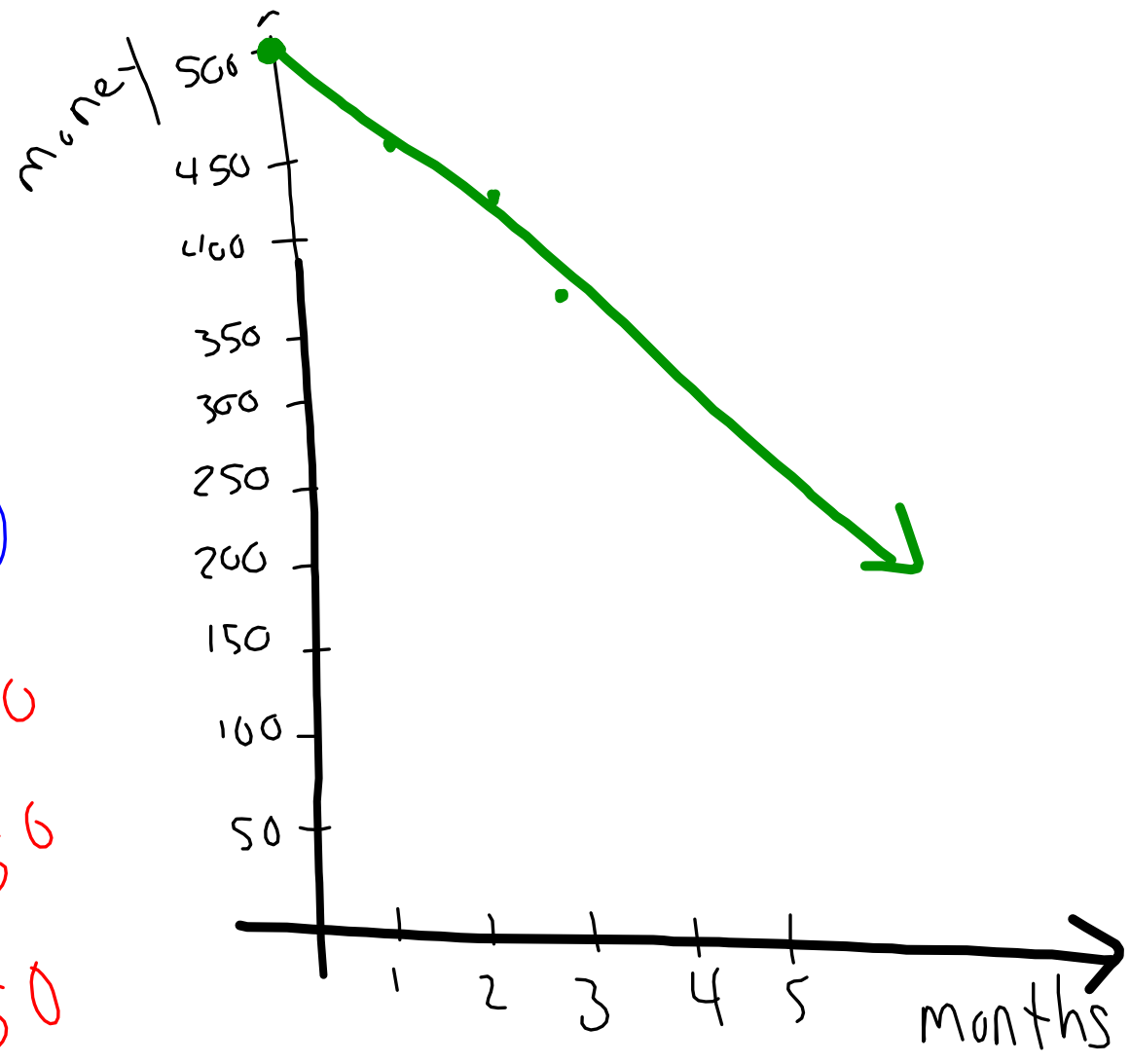
Mathew's bank account has $500. Each month Mathew spends $50.

ind = # of months

dep - value of bank

# of months	money in the bank ($)
0	500
1	450
2	400
3	350

+1, +1, +1; −50, −50, −50



Check Your Understanding

Textbook volume 1 pg. 176

Questions 1, 2, 4, and 6