

Warm-Up: Solve the following equations

1.  $\sqrt{2x - 4} = \sqrt{x}$

2.  $n = \sqrt{12 - n}$

3.  $k = 1 + \sqrt{3k - 5}$

# Polynomial Functions

# Today's Plan

1. Short lesson
2. Practice exercises
3. Exit ticket

# Polynomial Function

A *polynomial function* is a function  $f(x)$  of the form:

$$a_n x^n + a_{n-1} x^{n-1} + \cdots + a_1 x + a_0$$

Where  $n$  is a non-negative integer.

Examples	Non-examples
$f(x) = x^3 + 2x^2 + x - 1$	$p(x) = \sqrt{x}$
$f(y) = 7y^{100} + y$	$p(x) = x^2 - 6x + 4 - \frac{1}{x}$
$p(x) = 6$	$p(x) = 2^x$

# Terms and Coefficients

Let  $a_n x^n + a_{n-1} x^{n-1} + \dots + a_1 x + a_0$  be a polynomial.

Terms:  $a_n x^n, a_{n-1} x^{n-1}, \dots, a_1 x, a_0$

Coefficients:  $a_n, a_{n-1}, \dots, a_1, a_0$

What are the coefficients and terms of the polynomial  $f(x) = x^3 + 2x^2 + x - 1$ ?

# Degree of a term

A *term* is a product of constants and variables to a non-negative power.

The *degree of a term* is the sum of the exponents of all variables.

Examples	Non-examples
$x^3$ has degree 3	$x + 1$
$x^2yz^5$ has degree $2 + 1 + 5$	$\frac{1}{x}$
6 has degree 0	

# Degree of a polynomial

The *degree of a polynomial* is the maximum degree of its terms.

Polynomial	Degree
$f(x) = x^3 + 2x^2 + x - 1$	
$f(y) = y^2 + 7y^{100} + y$	
$p(x) = 6$	

# Special coefficients and terms

**Leading term:** the term with the highest degree.

**Leading coefficient:** the coefficient of the leading term.

**Constant term:** the term of degree 0.

What is the leading coefficient of the polynomial  $f(x) = x^3 + 2x^2 + x - 1$ ?

What is the constant term of the polynomial  $f(x) = x^3 + 2x^2 + x - 1$ ?



# Charge

## In-class:

Work on the practice problems in the handout in class.

Complete the Exit Ticket

## At-home:

Complete the homework handed out today.

Keep working on the Delta Math assignments