

# Quadratics

## Definitions

- Sequence
  - An ordered group of numbers, symbols, or pictures in which each item (called a term) follows another one while obeying a rule.
- Term
  - Each item in a sequence. For a sequence starting with  $t_1$ , the second term would be  $t_2$ , the third term would be  $t_3$ , etc.
- Infinite Sequence
  - A sequence that goes on forever. We can write it as:  
 $\{t_1, t_2, t_3, \dots\}$ .
- Finite Sequence
  - A sequence that comes to an end at a certain point. We can write it as:  $\{t_1, t_2, \dots, t_n\}$ .
- Domain
  - The set of all possible values for the independent variable in any relation, equation or function.
  - Example:  $D = \{x \mid x > 0, x \in \mathbb{N}\}$
  - The example is read as: “The domain is  $x$ , such that  $x$  is greater than zero and  $x$  is contained in the set of natural numbers.”
- Range
  - The set of all possible values for the dependent variable in any relation, equation or function.
  - Example:  $R = \{y \mid y \geq 3, y \in \mathbb{R}\}$
  - The example is read as: “The range is  $y$ , such that  $y$  is greater than or equal to three and  $y$  is contained in the set of real numbers.”

## Number Sets

- The following is a list of number sets:

<b>Number Set</b>	<b>Symbol</b>	<b>Numbers Contained in the Set</b>
Natural Numbers	$\mathbb{N}$	$\{1, 2, 3, 4, \dots\}$
Whole Numbers	$\mathbb{W}$	$\{0, 1, 2, 3, \dots\}$
Integers	$\mathbb{Z}$	$\{\dots, -2, -1, 0, 1, 2, \dots\}$
Rational Numbers	$\mathbb{Q}$	$\left\{ \frac{p}{q} \mid p \in \mathbb{Z}, q \in \mathbb{N} \right\}$
Irrational Numbers	$\mathbb{Q}'$	Examples: Pi, 1.4672, -532.1113
Real Numbers	$\mathbb{R}$	All Rational and Irrational Numbers