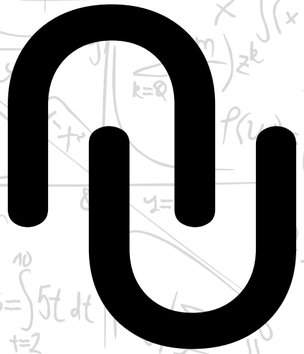

منصة ليرن

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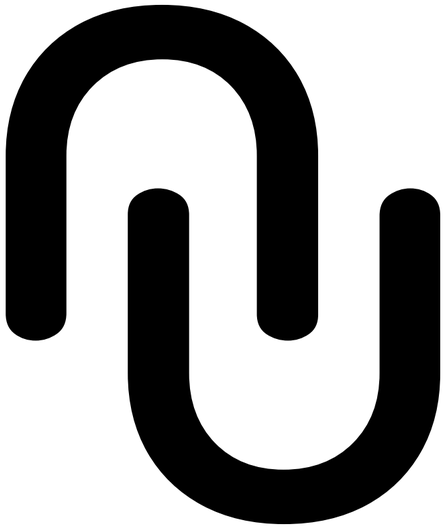

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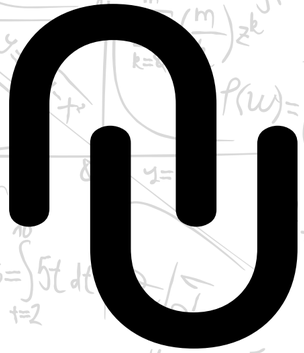

Chapter P

- ## P.1 : ALGEBRAIC EXPRESSIONS AND REAL NUMBERS

ALGEBRAIC EXPRESSION
EVALUATING ALGEBRAIC EXPRESSION
THE REAL NUMBER LINE
ABSOLUTE VALUE
DISTANCE BETWEEN POINTS ON REAL NUMBER LINE
SIMPLIFYING ALGEBRAIC EXPRESSIONS:

- ## P.2 : EXPONENTS

EXPONENTIAL NOTATION:
PRODUCT RULE:
QUOTIENT RULE
ZERO -EXPONENT RULE:
NEGATIVE -EXPONENT RULE:
POWER RULE (POWERS TO POWER):
PRODUCTS TO POWERS:
QUOTIENTS TO POWERS:
SIMPLIFYING EXPONENTIAL EXPRESSIONS:

- ## P.3 : RADICALS AND RATIONAL EXPONENTS

DEFINITION:
ADDING AND SUBTRACTING SQUARE ROOTS:
RATIONALIZING DENOMINATORS:
OTHER KINDS OF ROOTS:
SIMPLIFY
EVALUATE EACH EXPRESSION
SIMPLIFY USING PROPERTIES OF EXPONENTS:

- ## P.4 : POLYNOMIALS:

DEFINITION OF A POLYNOMIAL IN x:
ADDING AND SUBTRACTING POLYNOMIALS:
MULTIPLYING POLYNOMIALS:
SPECIAL PRODUCTS:
POLYNOMIAL IN TWO VARIABLES:

- ## P5 : FACTORING POLYNOMIALS

FACTORING
COMMON FACTOR:
FACTORING BY GROUPING:
FACTORING TRINOMIAL $ax^2 + bx + C$
FACTORING DIFFERENCE OF TWO SQUARE:
FACTORING THE SUM OR DIFFERENCE OF TWO CUBES:

- ## P6 : RATIONAL EXPRESSIONS

RATIONAL EXPRESSIONS
SIMPLIFYING RATIONAL EXPRESSIONS:
MULTIPLYING RATIONAL EXPRESSIONS:
DIVIDING RATIONAL EXPRESSIONS
ADDING AND SUBTRACTING RATIONAL EXPRESSIONS WITH THE SAME DENOMINATOR
FINDING THE LEAST COMMON DENOMINATOR
ADDING AND SUBTRACTING RATIONAL EXPRESSIONS THAT HAVE DIFFERENT DENOMINATORS

Chapter P: Fundamental Concepts of Algebra 1

P.1: Algebraic Expressions and Real numbers

Algebraic Expression: A combination of variables and numbers using the operation of addition $(+)$, subtraction$(-)$,multiplication$(\times)$ or division$(\div)$ as well as power or roots.

Example1:

$$x+6 \quad , \quad \frac{3x^2+2}{xy-3} \quad , \quad \sqrt{x-y}$$

Evaluating Algebraic Expression:

Order of Operations:

1- Perform operations within the **brackets** .
2- Evaluate all **Exponential expressions**.
3- Perform **Multiplication and division** (left to Right)
4- Perform **Addition and subtraction** (left to Right)

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Example2: Evaluate Each Algebraic Expression for the given value of the variables:

11) $x^2 - 3(x - y)$, for $x = 8$ and $y = 2$

15) $\frac{2x + 3y}{x + 1}$ for $x = -2, y = 4$

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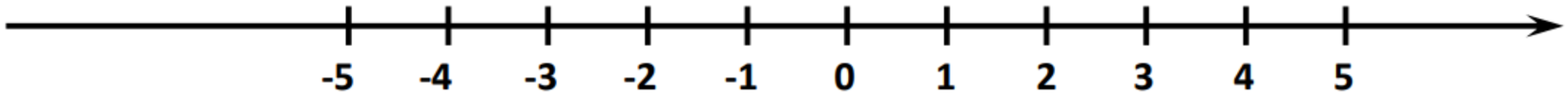
Chapter P: Fundamental Concepts of Algebra 1

P.1: Algebraic Expressions and Real numbers

The Real Number Line



Example3: Determine whether each statement is true or false:

43) $-13 < -2$

49) $0 \geq -6$

47) $-\pi \geq -\pi$

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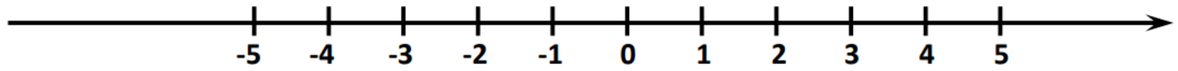
Absolute Value:

The absolute value of a real number x, denoted by $|x|$, is the distance from 0 to x on the number line. For example

$|-5| =$ $|-3| =$ $|0| =$ $|3| =$ $|5| =$



Definition of $|x|$ for any real number x

$$|x| = \begin{cases} x & if \ x \geq 0 \\ -x & if \ x < 0 \end{cases}$$

Note that: $|x| \geq 0$

Example4: Rewrite each expression without absolute value bars:

57) $\dfrac{-3}{|-3|}$

59) $\big||-3| - |-7|\big|$

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Chapter P: Fundamental Concepts of Algebra 1

P.1: Algebraic Expressions and Real numbers

Example5: Evaluate each algebraic expression for $x = 2$ and $y = -5$

61) $|x + y|$

63) $|x| + |y|$

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Distance between points on real number line:

If a and b are any two points on a real number line , then the Distance between two points a and b is given by

$$|a - b| = |b - a|$$

Example6: Express the distance between the given numbers **using absolute value**, then find the **distance** by evaluating the absolute value expression

69) -2 and 5

71) -19 and -4

Simplifying Algebraic Expressions:

Order of Operations:

1- Perform operations within the **brackets**.
2- Evaluate all **Exponential expressions**.
3- Perform **Multiplication and division** (left to Right)
4- Perform **Addition and subtraction** (left to Right)

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Chapter P: Fundamental Concepts of Algebra 1

P.1: Algebraic Expressions and Real numbers

Example7: Simplify each Algebraic Expression:

91) $5(3y-2)-(7y+2)$

93) $7-4[3-(4y-5)]$

95) $18x^2+4-[6(x^2-2)+5]$

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