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| Abstract: | The article reports on elementary algebra. As reported, there are several terms and concepts which are used in elementary algebra including monomials, polynomials and graph equations. A monomial is an expression that is either a numeral, a variable, or the product of a numeral and one or more variables raised to a positive integer power and a polynomial is the sum of monomials. (Copyright applies to all Abstracts) |
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Elementary Algebra

Monomials: A monomial is an expression that is either a numeral, a variable, or the product of a numeral and one or more variables raised to a positive integer power.

Examples of monomials are 14, $2x$, $-4x^2$, and $3xy^3$

Polynomials: A polynomial is the sum of monomials.

An example of a polynomial is $a^2+3ab-4b^2$

Simplifying Polynomials: A polynomial is simplified when no two of its terms are similar.

For example, $2x^2+3x^2+5$ is not simplified because there are two X^2 terms.

To simplify this polynomial, add the numbers in front of the variables:

$$2x^2+3x^2+5= 5x^2+5.$$

Equations in TWO Variables: Equations in one variable have one solution.

Equations in two variables have solutions that are pairs of numbers.

For example, one solution to the equation $x+y=5$ is $x=0$ and $y=5$.

Since you can substitute any number for X, there are a multiple number of solutions to equations in two variables.

Graphing Equations in Two Variables: To graph equations in two variables, you need to construct a number plane. Use the following steps to build a number plane:

Draw a horizontal number line. This is called the x axis

Draw a vertical number line at a right angle to the horizontal number line, intersecting so both number lines meet at their zero points.

This is called the y axis.

Points in the number plane are represented by a pair of numbers called the abscissa (x value) and ordinate (y value) (x, y).

To plot a point, locate the x value on the x axis, and then move up or down the number of units indicated by the y value.

For example, to plot (2,-3) on the number plane, locate 2 on the x axis and move 3 units down (negative direction)

Consider the equation $y=x$. Some coordinates for x and y that make this statement true are (-2,-2), (-1,-1), (0,0), (1,1), and (2,2).

Plotting these points on the number plane results in the following graph: Connecting these points results in a line, and every point on the line is a solution to the equation $y=x$. Linear Algebra

Linear Algebra is mathematics concerned with the study of vectors, vector spaces, and systems of linear equations. Applications to Linear Algebra are found in traffic flow, genetics, cryptography, engineering, physics, chemistry, computer science, and economics.

Abstract Algebra

Abstract Algebra deals with structures such as groups, rings, and fields. It is the formal version of elementary algebra taught in high school. Applications of Abstract Algebra include engineering, physics, chemistry, anthropology, computer science, and economics.

Boolean Algebra

Boolean Algebra is the algebra of two values, typically 0 and 1 (or true and false). It is referred to as the algebra of logic.

The main application of Boolean Algebra is digital electronic circuit design used in electronic devices and computers. Boolean Algebra is also used in database applications and internet search engine queries.

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DIAGRAM: linear Algebra

DIAGRAM: vector spaces

DIAGRAM: abstract algebra

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