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Education, Discipline

Application of Logarithmic and Exponential Functions

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Logarithms and exponential equations form part of our everyday life. They are mathematical concepts applied in solving a wide range of problems in the society. Usually the two go hand in hand complimenting each other where a function containing a logarithmic notation definitely comprises of an exponential.

In scientific and engineering disciplines, these functions are used to speed up decision making by solving problems faster. They also provide a very short way of representing complex abstract concepts in mathematical axioms. Three of the most common areas that employ this functions include calculation of interest earned on a certain amount of cash invested, carbon dating, in building and construction to determine the strength of materials, used in chemistry to calculate the number of hydrogen ions and hydroxyl ions in determining the pH values of substances and calculation of population growth.

They are used in calculating population growth for instance when a population of a given area is determined to be having a certain constant growth rate, then the population size can be calculated using a natural exponential function such that the population p after time t units is given by the equation $P(t) = P(0)e^{kt}$ where k is a constant. This equation can be rewritten using logarithmic notations to facilitate understanding and calculation. This method serves as a means of calculating bacteria populations in biological disciplines. The simplicity in using logarithms makes it important in calculations of such concepts as compound interest using very

few steps. Providing the society with such knowledge helps them to speed up banking services to customers. The long method involving calculation for each and every period would be very tiresome and time wasting. This way we learn to appreciate the contribution of logarithmic equations to the society in general.

References

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