ချစ်မှု သောစာကြောင်းတစ်ခုဖြစ်သည်
အတွက်သော စာင်ရှိ ဗိုလ်ချုပ်
နှစ်စဉ်စားသားစားရာ အရေးကြီး နှင့် စာရေးကြီးမားသောစားရာ
Chapter (1) Function

The composite function of two functions, f and g, is defined as \((f \circ g)(x) = f(g(x))\). The composition of two functions is itself a function.

For example, let \(f(x) = \frac{2x+3}{x-2}\) and \(g(x) = f(2)\). Then, \((f \circ g)(x) = \frac{2(2)+3}{2-2}\) is not defined for \(x = 2\).

Finding the inverse function of \(f\) is the process of reversing the operation performed by \(f\). If \(f\) is a function, then its inverse \(f^{-1}\) exists if and only if \(f\) is bijective (one-to-one and onto).

For any binary operation \(\circ\) on a set \(A\), if \(a \circ b = b \circ a\) for all \(a, b \in A\), then \(\circ\) is commutative. If \(a \circ (b \circ c) = (a \circ b) \circ c\) for all \(a, b, c \in A\), then \(\circ\) is associative.
Chapter (2) The Remainder Theorem and The Factor Theorem

Let $f(y) = y^7 + 3y^5 - 5$. When $f(y)$ is divided by $(y + 1)$, the remainder is $f(-1)$.

But $f(-1) = (-1)^7 + 3(-1)^5 - 5 = -3$.

The remainder is $-3$.

Let $f(x) = x^2 + x - p$. If $(x - 2)$ is a factor of $f(x)$, then $f(2) = 0$.

But $f(2) = 2^2 + 2 - p = 6 - p$.

Hence $6 - p = 0$.

$p = 6$. 

Chapter (3) The Binomial Theorem

The binomial expansion 

\[(r + 1) \binom{(r + 1)}{0} (a + \frac{b}{3})^0 + \binom{(r + 1)}{1} (a + \frac{b}{3})^1 + \binom{(r + 1)}{2} (a + \frac{b}{3})^2 + \cdots\]

is given by the sum of the terms:

\[(a + \frac{b}{3})^k = \binom{k}{r} a^{k-r} \left(\frac{b}{3}\right)^r, \quad r = 0, 1, 2, \ldots, k\]

where \(\binom{k}{r}\) is the binomial coefficient.

The first three terms of \((1+2x)^5\) are:

\[
(1+2x)^5 = 1^5 + 5(1)^4(2x) + 10(1)^3(2x)^2 + \cdots
\]

The first 3 terms of \((1+2x)^5 = 1^5 + 5(1)^4(2x) + 10(1)^3(2x)^2\)

The coefficient of \(x^2\) in \((1+2x)^5\) is obtained by considering:

- The coefficient of \(x^2\) in \((1+2x)^5\) is given by the binomial coefficient \(\binom{5}{2}\) multiplied by \(2^2\).
- The term in \(x^2\) is \(\binom{5}{2} (2x)^2 = \binom{5}{2} 2^2 x^2\).

Thus, the coefficient of \(x^2\) in \((1+2x)^5\) is:

\[
\binom{5}{2} 2^2 = 10 \times 4 = 40
\]

The term in \(x^2\) is:

\[
(1+2x)^5 = 1^5 + 5(1)^4(2x) + 10(1)^3(2x)^2 + \cdots
\]

\[
= 1 + 10x + 40x^2 + \cdots
\]
Chapter (4) Inequation  

\[ ax^2 + bx + c \geq 0 \text{ or } ax^2 + bx + c < 0 \]

The algebraic method is used to solve this inequality. The graphical method is also used to visualize the solutions. Algebrically, the solutions of \( ax^2 + bx + c = 0 \) are found using the quadratic formula and the nature of the roots determines the intervals where the inequality holds. Graphically, the solutions are found by plotting \( y = ax^2 + bx + c \) on the XY-coordinate plane.

Chapter (5) Sequences and Series  

\[ a_n = an + b \]

The sum of the first \( n \) terms of an A.P. is given by \( S_n = \frac{n}{2} [2a + (n-1)d] \). The sum of the first \( n \) terms of a G.P. is given by \( S_n = \frac{a(1-r^n)}{1-r} \), where \( r \) is the common ratio. The sum to infinity of a G.P. is given by \( S = \frac{a}{1-r} \) if \( |r| < 1 \).

Chapter (6) Matrices  

Equality of matrices and solutions of simultaneous equations (simultaneous equation)

\[ \begin{bmatrix} x^2 & y \\ x & y^2 \end{bmatrix} = \begin{bmatrix} 1 & -1 \\ 1 & 1 \end{bmatrix} \]

\[ x^2 = 1, \ y = -1, \ x = 1, \ y^2 = 1 \]

The solutions of the system of equations are:\n
- Additive inverse of matrix \( A \) is \( -A \),
- Multiplicative inverse of matrix \( A \) is \( A^{-1} \),
- Transpose of matrix \( A \) is \( A' \).
Chapter (7) Introduction to Probability

An event (event) of a random variable A is an occurrence. (Probability of an event A), P(A) is a value 0 ≤ P(A) ≤ 1. In a random experiment, a random variable X follows a distribution of mutually exclusive events (Random experiment). In a random experiment, independent events are mutually exclusive events. Mutually exclusive event A and B are such that Probability of A or B = P(A) + P(B).

Independent events in a random experiment follow the multiplication rule. If events A and B are independent, then Probability of A and B = P(A) × P(B).

Chapter (8) Circles

Chapter (9) Areas of Similar Triangles

Areas of Similar Triangles are proportional to the squares of corresponding sides. (Similarity and ∝) The ratio of areas of similar triangles is equal to the squares of corresponding sides.

Chapter (10) Introduction to Vector and Transformation Geometry

Vector is a directed quantity. Vector (→) is a directed quantity. Transformation geometry includes matrix, reflection matrix, translation matrix, and rotation matrix.

Chapter (11) Trigonometry

Logarithm is a function that maps a number to another number. In trigonometry, the Pythagorean theorem states that the square of the hypotenuse (Formula) of a right triangle (Law) is equal to the sum of the squares of the other two sides.
Chapter (12) Calculus

Find the limit of \( f(x) = \frac{x^2 - 2x}{x^2 - 4} \) when \( x \to 3 \).

\[
\lim_{x \to 3} \frac{x^2 - 2x}{x^2 - 4} = \lim_{x \to 3} \frac{x(x-2)}{(x+2)(x-2)}
\]

\[
= \lim_{x \to 3} \frac{x}{x + 2}
\]

\[
= \frac{3}{5}
\]

The limit \( \lim_{x \to 3} \frac{x}{x + 2} = \frac{3}{5} \) when \( x \to 3 \).

\[
\frac{dy}{dx} = \frac{\delta y}{\delta x}
\]

The derivative of \( y \) with respect to \( x \).

- Consider the function \( f(x) = \frac{x^2 - 2x}{x^2 - 4} \).
- Apply the limit as \( x \to 3 \).
- Simplify the expression.
- Evaluate the limit.

The limit is \( \frac{3}{5} \).