ALGEBRAIC AND TRANCENDENTAL EQUATIONS

ALGEBRAIC:

A polynomial eqⁿ of the form:

$$f(x) = p_n(x) \equiv a_0 x^{n-1} + a_1 x^{n-2} + \ldots + a_{n-1} x + a_n = 0$$

is called an Algebraic Equation.

For example: (a) $x^6 - 5x^4 + 7x^3 + 2 = 0$

(b) $2x^3 - 19x^2 + 7x + 3 = 0$

TRANCENDENTAL

An eqⁿ which contains polynomials, trigonometric funcⁿs, logarithmic funcⁿs, exponential funcⁿs, etc. is called a Transcendental Equation.

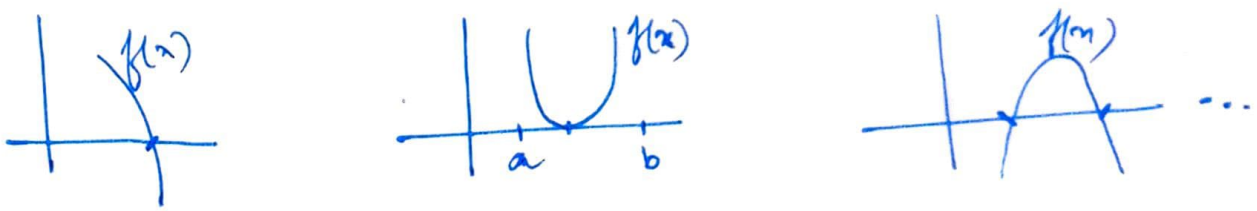
For example: (a) $xe^{2x} - \operatorname{cosec} x = 0$

(b) $\tan x - 2\log(x^2) + 7 = 0$

SOLUTION OF ALGEBRAIC AND TRANCENDENTAL EQUATIONS:

$f(x) = 0$

It can be:



etc.

If $f(a)\ f(b) < 0$

Then $\exists$ atleast one real root in $x \in (a, b)$

But the converse is not true.

Numerical Methods to find a Solution

1. BISECTION Method
2. REGULA-FALSI Method
3. NEWTON-RAPHSON Method