

SAMPLE COPY - NOT FOR SALE

FOR CLASS XII

FORMULAE @MY DESK

COMPILED BY DR. ANITA ARORA

Limits

Continuity & Differentiability

Differentiation

Integration

Definite Integrals

Area of Bounded Region

Differential Equations

Inverse Trigonometric Functions

Probability

Vectors and 3D

PRODUCT FEATURES

FlowChart Presentation

Visual steps for quick
procedure guidance



Focused Content

Essential information
only; no distractions



Technique Simplification

Easy steps for complex
techniques



Concept Explanation

Brief, clear understanding
of theories



Working Rules + Methods

Application rules and
methodologies provided



Categorized Content

Logical grouping for fast
formula finding



DISCLAIMER

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Formulae

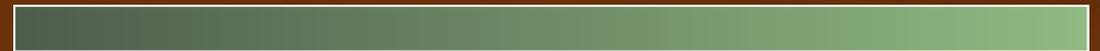
1. LIMITS



2. CONTINUITY & DIFFERENTIABILITY



3. DIFFERENTIATION



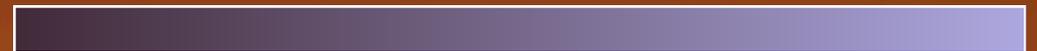
4. TRIGONOMETRIC RELATIONS



5. INTEGRATION



6. DEFINITE INTEGRALS



7. AREA OF BOUNDED REGION



8. DIFFERENTIAL EQUATIONS



9. INVERSE TRIG FUNCTIONS



10. PROBABILITY



11. VECTORS

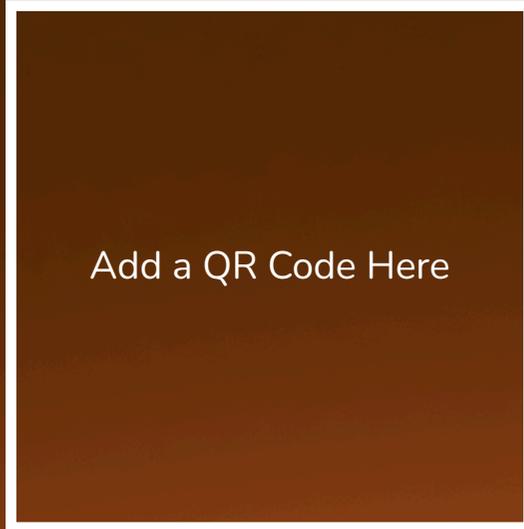


12. 3-D GEOMETRY



CTA for the QR Code

November 2025



MRP - ₹1599

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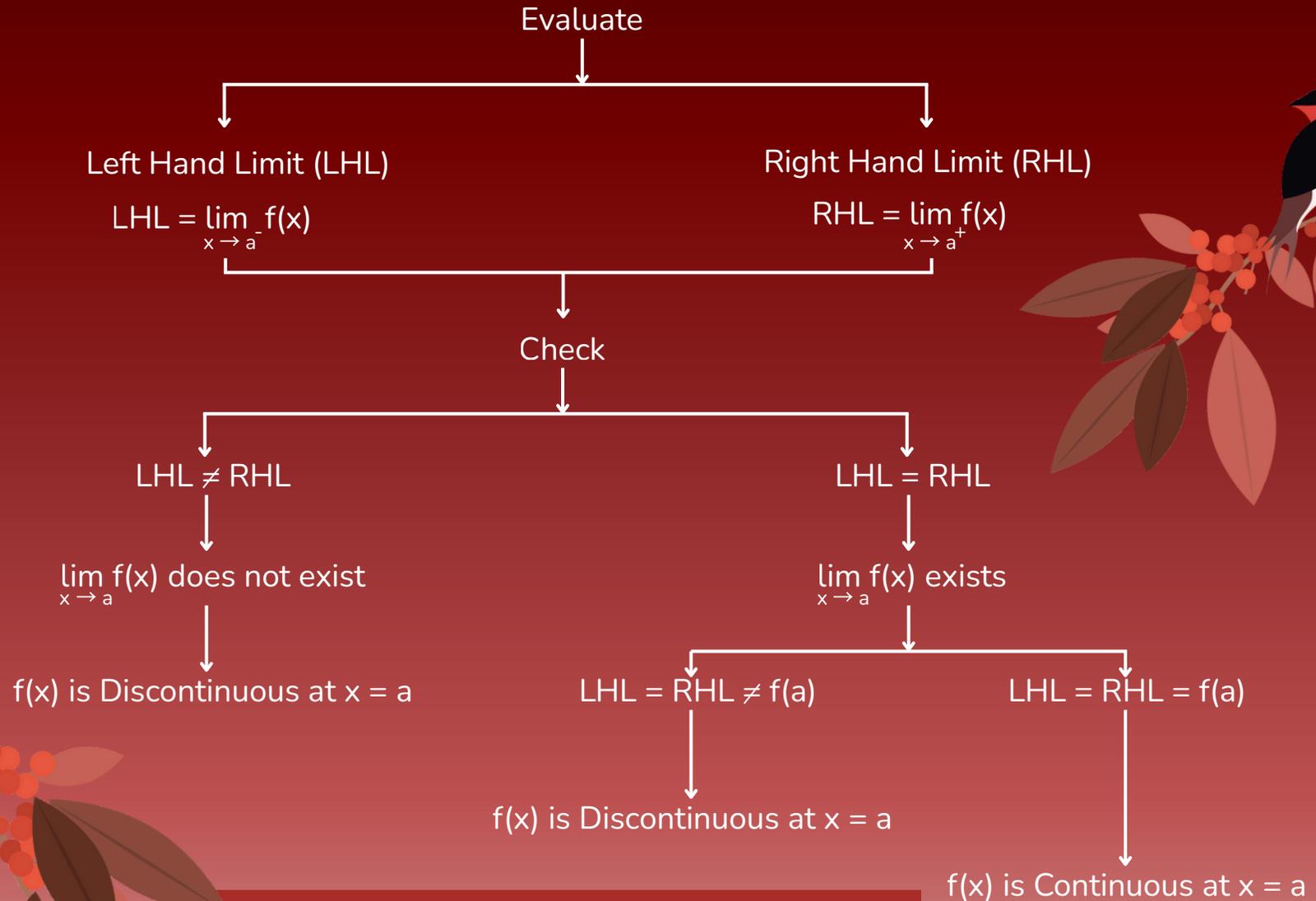
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WORKING RULE

To check the continuity of $f(x)$ at $x = a$



Condition for Continuity : $\lim_{x \rightarrow a^-} f(x) = \lim_{x \rightarrow a^+} f(x) = f(a)$

PRODUCT OF TWO VECTORS (\vec{a} and \vec{b})

$$|\vec{a}| \neq 0 \text{ and } |\vec{b}| \neq 0$$

SCALAR PRODUCT
or
DOT PRODUCT

$$\vec{a} \cdot \vec{b} = ab \cos\theta$$

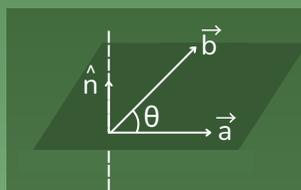
$$\cos\theta = \frac{\vec{a} \cdot \vec{b}}{|\vec{a}| |\vec{b}|}$$

If $(\vec{a} \cdot \vec{b}) = 0$ then,

$a = 0$ or or $b = 0$

$$\theta = 90^\circ$$

$$\vec{a} \perp \vec{b}$$



\hat{n} : unit vector perpendicular to both \vec{a} & \vec{b}
 θ : angle between co-initial vectors \vec{a} & \vec{b}

VECTOR PRODUCT
or
CROSS PRODUCT

$$\vec{a} \times \vec{b} = (ab \sin\theta)\hat{n}$$

$$\sin\theta = \frac{|\vec{a} \times \vec{b}|}{|\vec{a}| |\vec{b}|}$$

If $(\vec{a} \times \vec{b}) = \vec{0}$ then,

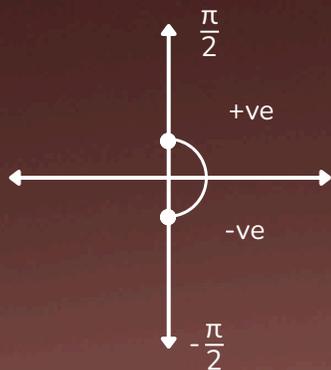
$a = 0$ or or $b = 0$

$$\theta = 0^\circ$$

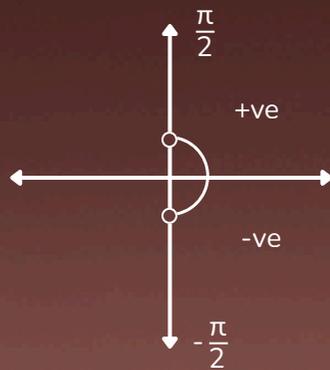
$$\vec{a} \parallel \vec{b}$$

QUADRANT SELECTION FOR PRINCIPAL VALUES (RANGE) OF FUNCTIONS

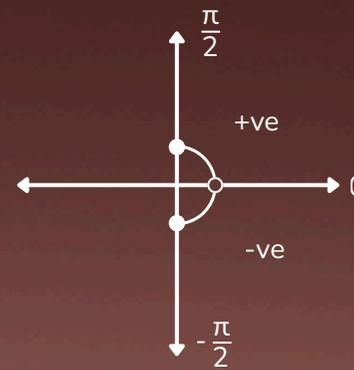
1. $y = \sin^{-1}x$



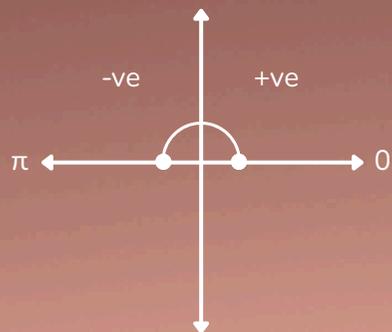
2. $y = \tan^{-1}x$



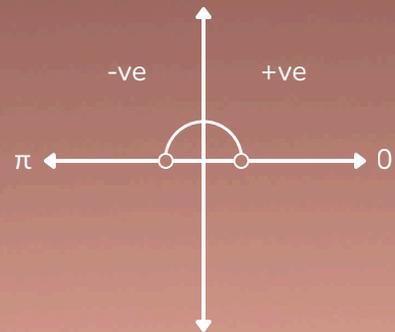
3. $y = \operatorname{cosec}^{-1}x$



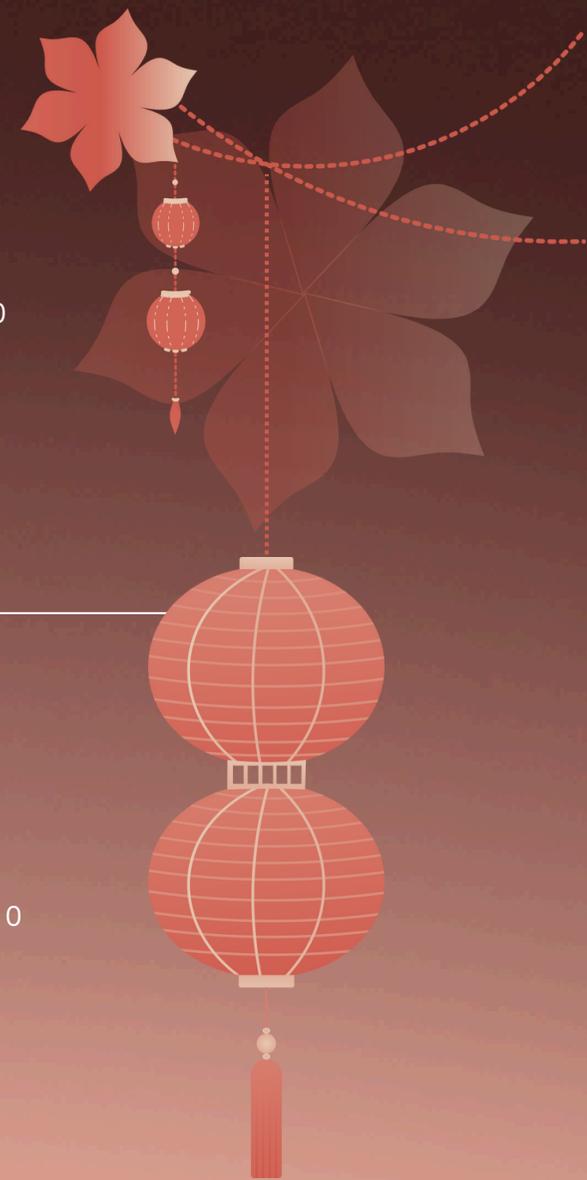
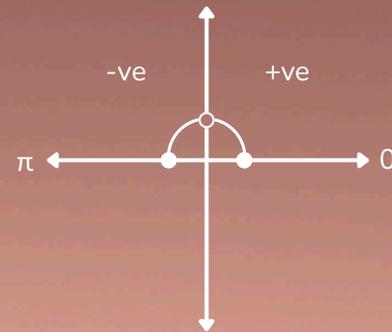
4. $y = \cos^{-1}x$



5. $y = \cot^{-1}x$



6. $y = \sec^{-1}x$

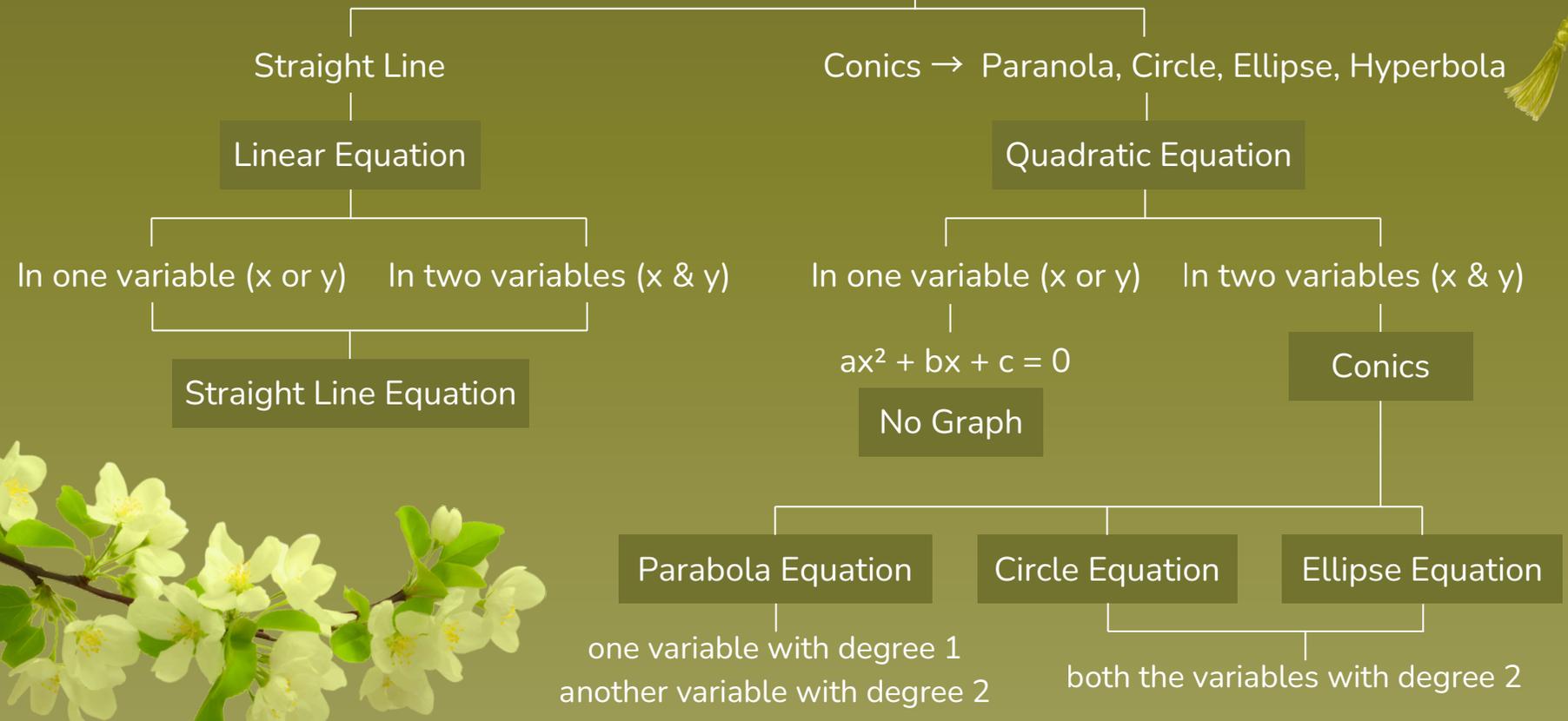


FOUR IMPORTANT STEPS

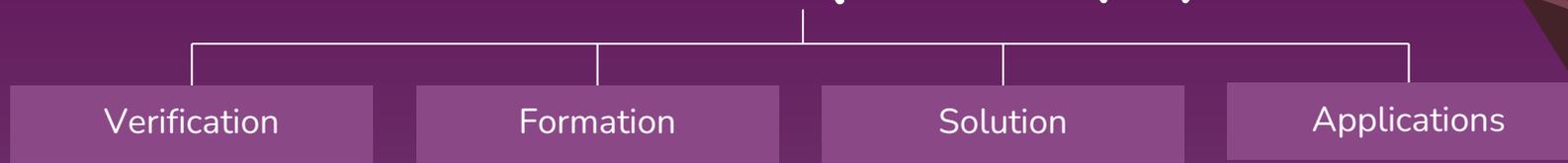
- A) Drawing the graphs
- B) Finding points of intersection
- C) Shading the region
- D) Evaluation of area



IDENTIFYING EQUATIONS OF GRAPHS



DIFFERENTIAL EQUATIONS (DE)



1. VERIFICATION OF DE (Working Rule with Example)

Example - Verify that $y = ce^{\tan^{-1}x}$ is a solution of DE $(1 + x^2) \frac{d^2y}{dx^2} + (2x - 1) \frac{dy}{dx} = 0$

Working Rule

1. Differentiate y to get $\frac{dy}{dx}$
2. Express $\frac{dy}{dx}$ in terms of y , if possible
3. Check if there's any denominator in the expression of $\frac{dy}{dx}$, if yes then cross multiply
4. Now differentiate again to get an appropriate expression of $\frac{d^2y}{dx^2}$
5. Make use of expressions of y (step 1) and $\frac{dy}{dx}$ (step 2) to substitute and obtain the required DE

Solution

$$y = ce^{\tan^{-1}x}$$

$$\text{Differentiating, } \frac{dy}{dx} = \frac{ce^{\tan^{-1}x}}{1 + x^2}$$

$$\frac{dy}{dx} = \frac{y}{1 + x^2} \quad \rightarrow \text{In terms of } y$$

$$(1 + x^2) \frac{dy}{dx} = y \quad \rightarrow \text{Cross Multiplication}$$

$$(1 + x^2) \left(\frac{d^2y}{dx^2} \right) + 2x \frac{dy}{dx} = \frac{dy}{dx}$$

$$(1 + x^2) \left(\frac{d^2y}{dx^2} \right) + (2x - 1) \frac{dy}{dx} = 0$$

CONDITIONAL PROBABILITY

$$P(A/B) = \frac{P(A \cap B)}{P(B)}, P(B) \neq 0$$

$$P(B/A) = \frac{P(A \cap B)}{P(A)}, P(A) \neq 0$$

IMPOSSIBLE EVENTS

If A and B are
Mutually Exclusive Events

$$(A \cap B) = \Phi$$
$$P(A \cap B) = 0$$

$$P(A/B) = 0 \text{ and } P(B/A) = 0$$

This means (A/B) & (B/A) are
Impossible Events

INDEPENDENT EVENTS

If A and B are
Independent Events

$$P(A \cap B) = P(A) \cdot P(B)$$

$$P(A/B) = P(A) \text{ or } P(A/B) = 1 - P(\bar{A})$$

and

$$P(B/A) = P(B) \text{ or } P(B/A) = 1 - P(\bar{B})$$

DEPENDENT EVENTS

If A and B are
Dependent Events

$$P(A \cap B) = P(A) \cdot P(B/A)$$

and

$$P(A \cap B) = P(B) \cdot P(A/B)$$