

## **Integration By Parts**

SUBJECT : MATHEMATICS CHAPTER NUMBER:7 CHAPTER NAME :INTEGRALS

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### Rule of By Parts (Product Rule)



let u and v be two differentiate functions of a single variable x, then the integral of the product of these two functions denoted as  $\int u \cdot v \, dx$  and defined as

$$\int u. v dx = u \int v dx = \int \left(\frac{d}{dx}(u) \int v dx\right) dx.$$

If in the product two functions are of different types, then take that function as first function (i.e *u*) which comes first in the word *ILATE*, where,

*I*: Inverse trigonometric function

L: Logarithmic function

A: Algebraic function

T: Trigonometric function

E: Exponential function



Evaluate the Integral

 $\int x \sin x \, dx$ 



Evaluate the Integral

 $\int \log x \, dx$ 



Evaluate the Integral

 $\int e^x \cos x \, dx$ 

**Note:-** Above integral can also be determined by taking *cos x* as the first function and

 $e^x$  the second function.



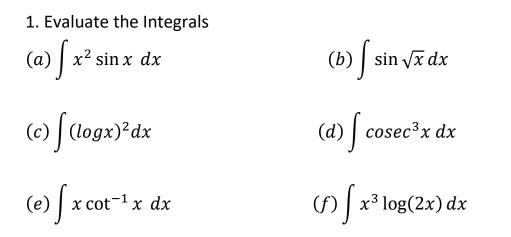
Evaluate the Integrals

$$(a)\int e^{ax}\cos bx\ dx$$

 $(b)\int e^{ax}\sin bx\ dx$ 



#### Assignments



2. Answer the questions from Qno. 1 to 15 Exercise 7.6 from NCERT book.



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