**BAB II**

**INTEGRAL TERTENTU**

**Notasi :**

 → dibaca integral tertentu dari f(x) terhadap x, dari x = a sampai x = b.

**Teorema (Teorema Dasar Kalkulus)**

Jika f(x) kontinu dalam interval [a, b] dan jika F(x) adalah hasil integral tentu dari f(x), maka :



Sifat-sifat integral tertentu :

1) 

2) 

3) 

4) 

5) , dengan a <b <c

Contoh-contoh :

1) 

2) 

3) 

4) 

 = 

5)  → subst : u x2 + 9 → du = 2x dx

 → 

 = 1/3 (x2 + 9)3/2 + C

 → 

6) 

 subst : u = x2 + x → du = (2x + 1) dx

 Batas : x = 0 → u = 2

 x = 1 → u = 2

 →  = 

 = 2/3 [2

 = 4/3. 

7) 

 subst : u = x2 + 2x + 6 → du = (x + 1) dx

 Batas : x = 0 → u = 6

 x = 1 → u = 9

 → 

**PENGGUNAAN SIMETRI**

Ingat : Fungsi Genap : f (-x) = x f(x)

 : f (-x) = - f(x)

Operasi Perkalian dan Pembagian Fungsi :

* Genap vs Genap → Genap
* Genap vs Ganjil → Ganjil
* Ganjil vs Genap → Ganjil
* Ganjil vs Ganjil → Genap

**Symetric Theorem:**

a) If f is even function, then

 

b) If f is odd function, then

 

Examples :

1) f(x) = x2 → f(-x) = (-x)2 = x2 = f(x)

 f(x) = x2 is even function

 → 

2) f(x) = x3 → f(-x) = (-x)3 = -x3 = -f(x)

 f(x) = x3 is odd function

 →  

3) f(x) = sin x → f(-x) = sin (-x) = -sin x = - f(x)

 f(x) = sin x is odd function

4) f(x) = cos x → f(-x) = cos (-x) = cos x = f(x)

 f(x) = cos x is even function

5)  = 

 = 2

6) =

 = 2

 = 2  = 2 [1 – 0] + 2 [1/3 – 0]

 = 2 + 2/3 = 8/3

**PERIODIC FUNCTION**

Definition : Function f is called periodic function if there is one number p such that

 f (x + p) = f(x)

Theorem : If f is periodic function with period p, then :

 

Y

B

A

X

b-

a+p

b

a

Example :

Calculate: 

2π

π

0

  = 

 = 

 = 

 = [-2 cos π – (-2 cos 0)] = -2 (-1) +2 = 4

EXAMINATION :

1) 

2) 

3) 

4) 

5) 