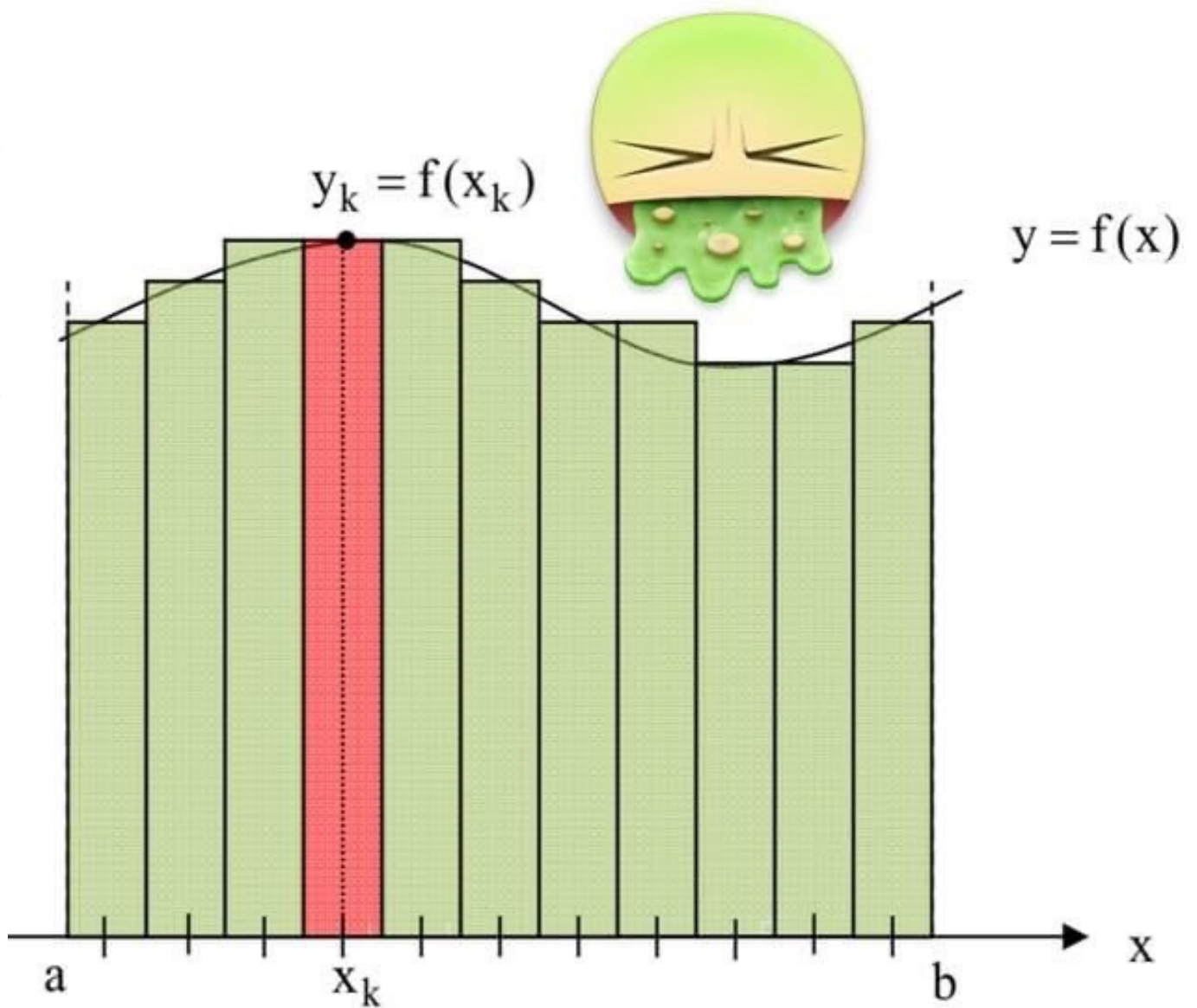


206103 Fin Review Part2



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ကဏ္ဍ Final !

202103

Past 2

၁။ မြေအောက်ရေ

၁.၁ မြေအောက်ရေ

၁.၂ မြေအောက်ရေ

၁.၃ မြေအောက်ရေ

၂။ မြေအောက်ရေ

၃။ မြေအောက်ရေ

၃.၁ မြေအောက်ရေ

၃.၂ မြေအောက်ရေ

- Disk Method

- Shell Method.

၄။ မြေအောက်ရေ

1) Integration

ii) Integration by part

Integration by part
 $\int u \cdot v' dx = uv - \int v \cdot u' dx$

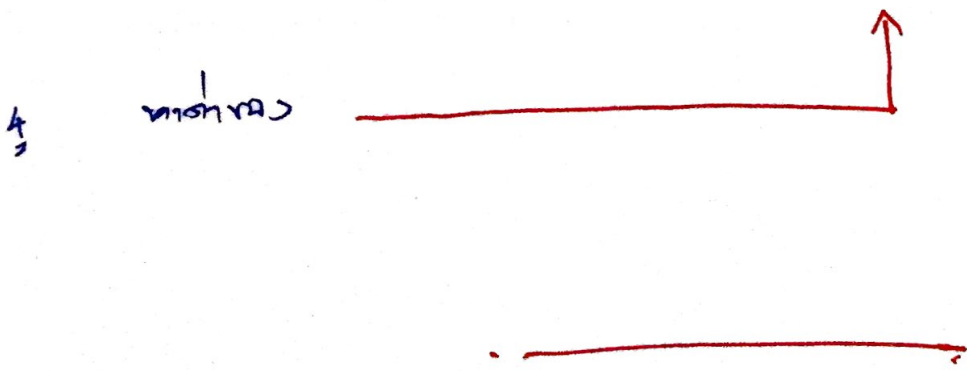
1) Integration by part

- 1 Logarithm
- 2 Inverse Trigones.
- 3 Polynomials.
- 4 Trigones.
- 5 Exponentials.

$\int u \cdot v' dx \rightarrow u$, $\int u' \cdot v dx \rightarrow dv$

2) $u = \square$ $dv = \Delta dx$
 $\frac{du}{dx} = ?$ $v = \int \Delta dx$
 $du = ? dx$ $v = ??$

3) Integration by part $\int u dv = uv - \int v du$



(2) การแยกเศษส่วนย่อย

การแยกเศษส่วนย่อยของ $\frac{f(x)}{g(x)}$ ที่ $g(x) = (ax+b)^m (cx^2+dx+e)^n$ + ...

ขั้นตอน

1. การหาเศษส่วนย่อย

2. การหาเศษส่วนย่อย

$$\frac{f(x)}{(ax+b)^m (cx^2+dx+e)^n} = \frac{A}{(ax+b)^1} + \frac{B}{(ax+b)^2} + \dots + \frac{C}{(ax+b)^m} + \frac{Dx+E}{(cx^2+dx+e)^1} + \frac{Fx+G}{(cx^2+dx+e)^2} + \dots + \frac{Hx+I}{(cx^2+dx+e)^n}$$

3. หาค่า A, B, C, ...

→ การหาเศษส่วนย่อย

→ การหาเศษส่วนย่อย

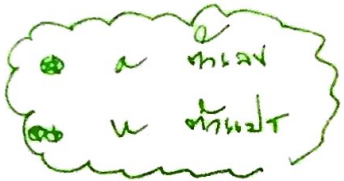
→ การหาเศษส่วนย่อย

→ หาค่า A, B, C, ...

2. การหาเศษส่วนย่อย แล้ว \int ...

1.3) $\int \frac{1}{\sqrt{a^2 - u^2}}$

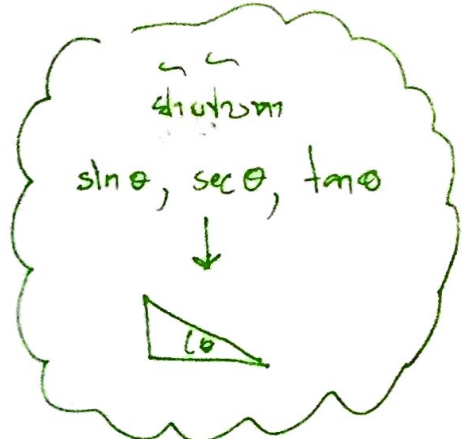
$\int \frac{1}{\sqrt{a^2 - u^2}} \rightarrow \int \frac{1}{\sqrt{a^2 - u^2}} \rightarrow \int \frac{1}{\sqrt{u^2 - a^2}} \rightarrow \int \frac{1}{\sqrt{u^2 + a^2}}$



ขั้นตอน

1. $\int \frac{1}{\sqrt{a^2 - u^2}}$

$\int \frac{1}{\sqrt{a^2 - u^2}} \rightarrow \int \frac{1}{\sqrt{a^2 - u^2}}$
 $\int \frac{1}{\sqrt{u^2 - a^2}} \rightarrow \int \frac{1}{\sqrt{u^2 - a^2}}$
 $\int \frac{1}{\sqrt{u^2 + a^2}} \rightarrow \int \frac{1}{\sqrt{u^2 + a^2}}$



2. $u = a \sin \theta$

3. $u = a \sec \theta$

4. $u = a \tan \theta$

$1 - \sin^2 \theta \rightarrow \cos^2 \theta$
 $\sec^2 \theta - 1 \rightarrow \tan^2 \theta$
 $\tan^2 \theta + 1 \rightarrow \sec^2 \theta$

5. $\int \frac{1}{\sqrt{a^2 - u^2}} = \int \frac{1}{a \cos \theta} \cdot a \cos^2 \theta d\theta = \int \cos \theta d\theta = \sin \theta + C$

6. $\int \frac{1}{\sqrt{u^2 - a^2}} = \int \frac{1}{a \tan \theta} \cdot a \sec^2 \theta d\theta = \int \sec \theta d\theta = \ln |\sec \theta + \tan \theta| + C$

$\sin \theta$	$\frac{\pi}{2}$	$\operatorname{cosec} \theta = \frac{1}{\sin \theta}$	$\frac{\pi}{2}$
$\cos \theta$	$\frac{\pi}{2}$	$\sec \theta = \frac{1}{\cos \theta}$	$\frac{\pi}{2}$
$\tan \theta$	$\frac{\pi}{4}$	$\cot \theta = \frac{1}{\tan \theta}$	$\frac{\pi}{4}$

2) $\int \frac{y}{x^2+y^2} dx$

$$\int f(x) dx = F(x) + c$$

$$\int_a^b f(x) dx = [F(x)]_a^b$$
$$= F(b) - F(a)$$

Ex

$$\int_0^2 (x^3 + 2) dx$$

$$= \left[\frac{x^4}{4} + 2x \right]_0^2$$

$$= \left[\frac{(2)^4}{4} + 2(2) \right] - \left[\frac{(0)^4}{4} + 2(0) \right]$$

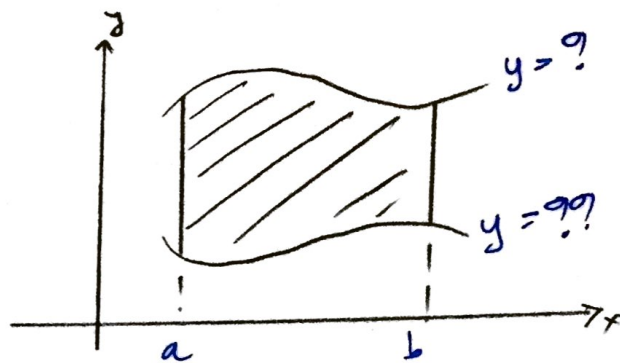
$$= \frac{16}{4} + 4 - 0$$

$$= 8 \quad \neq$$

3) \int ကို အသုံးပြုရန်

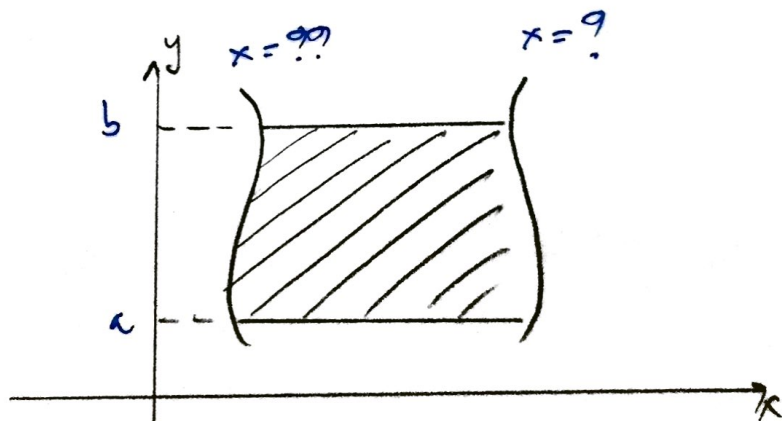
3.1) ကို အသုံးပြုရန်

အစား x



$$A = \int_a^b [\text{တောင့် } y \text{ ကို အသုံးပြုရန်}] - [\text{တောင့် } y \text{ ကို အသုံးပြုရန်}] dx$$

အစား y

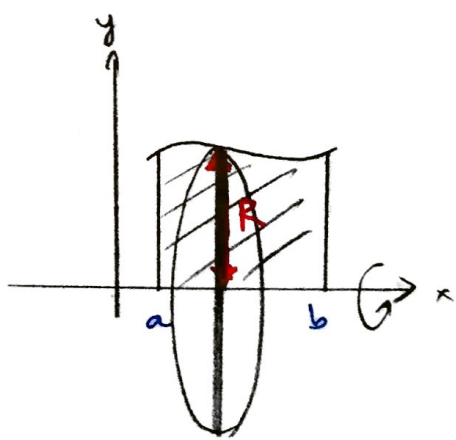


$$A = \int_a^b [\text{တောင့် } x \text{ ကို အသုံးပြုရန်}] - [\text{တောင့် } x \text{ ကို အသုံးပြုရန်}] dy$$

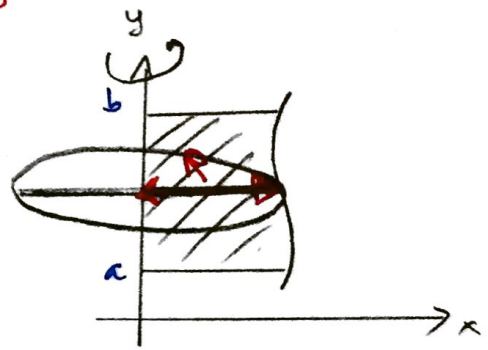
3.2) Volume

Disk Method

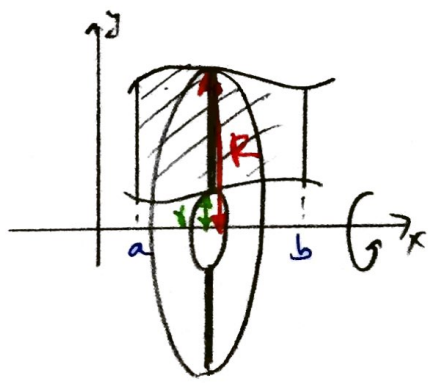
→ $\int_a^b R^2 dx$ → $\int_a^b R^2 dy$
 ↳ dx dy



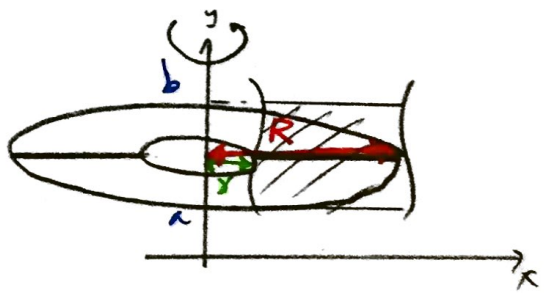
$$V = \pi \int_a^b R^2 dx$$



$$V = \pi \int_a^b R^2 dy$$



$$V = \pi \int_a^b R^2 - r^2 dx$$



$$V = \pi \int_a^b R^2 - r^2 dy$$

• R, r $\frac{dy}{dx}$ $\frac{dx}{dy}$
 $\frac{dy}{dx}$ $\frac{dx}{dy}$
 $\frac{dx}{dy}$ $\frac{dy}{dx}$

4 \int_{improper} (Improper Integral)

1 $\int_{-\infty}^{\infty}$ \int_{a}^{∞} $\int_{-\infty}^b$

2 $\int_{-\infty}^{\infty} f(x) dx = \lim_{t \rightarrow \infty} \int_{-t}^t f(x) dx$

PC
improper

$x = 0, 00, \dots$

1 $\int_{-\infty}^{\infty}$

2 $\int_{-\infty}^{\infty} f(x) dx = \lim_{t \rightarrow \infty} \int_{-t}^t f(x) dx$

$\int_{-\infty}^{\infty} f(x) dx \rightarrow \int_{-\infty}^{\infty} f(x) dx$

3 $\int_{-\infty}^{\infty} f(x) dx$, $\lim_{t \rightarrow \infty} \int_{-t}^t f(x) dx$

4 $\int_{-\infty}^{\infty} f(x) dx$, $\lim_{t \rightarrow \infty} \int_{-t}^t f(x) dx$

5 \lim

6 $\int_{-\infty}^{\infty} f(x) dx \rightarrow \int_{-\infty}^{\infty} f(x) dx$ (Converge)

$\int_{-\infty}^{\infty} f(x) dx \rightarrow \int_{-\infty}^{\infty} f(x) dx$ (Diverge)

$\pm \infty$