CONCEPT MAP

FORM 5

INTEGRATION

Indefinite Integrals

$\int f'(x)\,dx = f(x) + c$

Integrals of ax^n, $n \neq -1$

$\int ax^n\,dx = \dfrac{ax^{n+1}}{n+1} + c$

Integrals of the Functions of the Sum of Algebraic Terms

$\int [f'(x) + g'(x)]\,dx = f(x) + g(x) + c$

Integrals of the Function

$(ax + b)^n$, $n \neq -1$

$\int (ax+b)^n\,dx = \dfrac{(ax+b)^{n+1}}{(n+1)a} + c$

Definite Integrals

$\int_a^b f'(x)\,dx = f(b) - f(a)$

Laws of Definite Integrals

(a) $\int_a^b kf(x)\,dx = k\int_a^b f(x)\,dx$

(b) $\int_a^b [f_1(x) \pm f_2(x)]\,dx = \int_a^b f_1(x)\,dx \pm \int_a^b f_2(x)\,dx$

(c) $\int_a^b f(x)\,dx = -\int_b^a f(x)\,dx$

(d) $\int_a^b f(x)\,dx + \int_b^c f(x)\,dx = \int_a^c f(x)\,dx$

Integration as the Summation of Areas

- $A_x = \int_a^b y\,dx$
- $A_y = \int_a^b x\,dy$

Integration as the Summation of Volumes

- $V_x = \pi\int_a^b y^2\,dx$
- $V_y = \pi\int_a^b x^2\,dy$

Determining the Equation of a Curve From its Gradient Function

If $\dfrac{dy}{dx} = \int f'(x)\,dx$, then $y = \int f'(x)\,dx = f(x) + c$