# 1. INDEFINITE INTEGRATION

## SYNOPSIS:
## GENERAL FORMULAE

- $\int K\,dx = Kx + c$ if $K \in R$
- $\int x^n dx = \dfrac{x^{n+1}}{n+1} + c$, If $n \neq -1$
- $\int \dfrac{1}{\sqrt{x}} dx = 2\sqrt{x} + c$
- $\int \dfrac{1}{x} dx = \log|x| + C$
- $\int e^x . dx = e^x + C$
- $\int a^x dx = \dfrac{a^x}{\log a} + C$ (for $a > 0,\ a \neq 1$)
- $\int Sin\,x\,dx = -Cos\,x + C$
- $\int Cos\,x\,dx = Sin\,x + C$
- $\int \tan x\,dx = \log|Sec\,x| + C$

  $= -\log|\cos x| + c$
- $\int Cot\ x\ dx = \log|Sin\ x| + C$
- $\int Sec\,x\,dx = \log|Sec\,x + \tan x| + C$

  $= \log\left|\tan\left(\dfrac{\pi}{4} + \dfrac{x}{2}\right)\right| + C$
- $\int Co\sec x\,dx = \log|Co\sec x - Cot\,x| + C$

  $= \log\left|\tan\dfrac{x}{2}\right| + C$

  $= -\log|Co\sec x + Cot\,x| + C$
- $\int Sec\,x \tan x\,dx = Sec x + C$
- $\int Co\sec x \cot x\,dx = -Co\sec x + C$
- $\int \sec^2 x\ dx = \tan x + C$
- $\int Co\sec^2 x\ dx = -Cot\,x + C$
- $\int Sin\,h\,x\,dx = Cos\,h\,x + C$
- $\int Cos\,h\,x\ dx = Sin\,h\,x + C$
- $\int \tan h\,x\ dx = \log|Cosh\,x| + C$
- $\int Cot\,h\,x\ dx = \log|Sin\,h\,x| + C$
- $\int Sec\,h\,x\ dx = 2\tan^{-1}(e^x) + C$
- $\int Co\sec hx = \log|\tan h\dfrac{x}{2}| + C$
- $\int Sec\,h^2 x\,dx = \tan h\,x + C$
- $\int Co\sec\ h^2 x\ dx = -Cot\ h\,x + C$
- $\int Sec\,hx \tan h\,x\,dx = -Sec\,hx + C$
- $\int Co\sec h\,x\,Cot\,hx\,dx = -Co\sec hx + C$

## IMPORTANT RESULTS

- $\int f^1(ax+b)dx = \dfrac{f(ax+b)}{a} + C$
- $\int \dfrac{f^1(x)}{f(x)} dx = \log|f(x)| + C$
- $\int \{f(x)\}^n . f^1(x)dx = \dfrac{\{f(x)\}^{n+1}}{n+1} + C\ (n \neq -1)$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int \frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int \frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int \frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int \frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int \frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int \frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int \frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int \frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int \frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

## STANDARD INTEGRALS

- $\int \frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int \frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int \frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2+a^2}\right| + c$
- $\int \frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int \frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int \frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int \sqrt{a^2-x^2}\,dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int \sqrt{x^2-a^2}\,dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int \sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x + \sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

**INTEGRATION OF PARTIAL FRACTIONS**

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

**STANDARD INTEGRALS**

- $\int\frac{1}{\sqrt{a^2-x^2}}\,dx = Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,Tan^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,dx = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+C$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^{1}\{g(x)\}.g^{1}(x)dx = f\{g(x)\} + C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x) + C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

**INTEGRATION OF PARTIAL FRACTIONS**

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

**STANDARD INTEGRALS**

- $\int\frac{1}{\sqrt{a^2-x^2}}\,dx = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2+a^2}\right| + c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + c$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int\sqrt{x^2+a^2}\,dx = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + C$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x + \sqrt{x^2+a^2}\right| + c$

- $\int f^{1}\{g(x)\}.g^{1}(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int \frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int \frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int \frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int \frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int \frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int \frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int \frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int \frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int \frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

## STANDARD INTEGRALS

- $\int \frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int \frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int \frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2+a^2}\right| + c$
- $\int \frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int \frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int \frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int \sqrt{a^2-x^2}\,dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int \sqrt{x^2-a^2}\,dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int \sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x + \sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^{1}\{g(x)\}.g^{1}(x)dx = f\{g(x)\} + C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x) + C$
- $\int \frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int \frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int \frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int \frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int \frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int \frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int \frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int \frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int \frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

## STANDARD INTEGRALS

- $\int \frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int \frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int \frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2+a^2}\right| + c$
- $\int \frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int \frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int \frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int\sqrt{a^2-x^2}\,dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int\sqrt{x^2-a^2}\,dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x + \sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int \frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int \frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int \frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int \frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int \frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int \frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int \frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int \frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int \frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int \frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int \frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int \frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int \frac{1}{x^2+a^2}dx = \frac{1}{a}\ \mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int \frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int \frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

**INTEGRATION OF PARTIAL FRACTIONS**

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

**STANDARD INTEGRALS**

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\text{dx} = \text{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\text{Tan}^{-1}\left(\frac{x}{a}\right)+\text{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\text{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\text{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+C$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

**INTEGRATION OF PARTIAL FRACTIONS**

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

**STANDARD INTEGRALS**

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,dx = \text{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\text{Tan}^{-1}\left(\frac{x}{a}\right)+\text{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,dx = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+C$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\} + C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x) + C$
- $\int \frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int \frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int \frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int \frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int \frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int \frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int \frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int \frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int \frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

## STANDARD INTEGRALS

- $\int \frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int \frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int \frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2+a^2}\right| + c$
- $\int \frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int \frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int \frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int \sqrt{a^2-x^2}\,dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int \sqrt{x^2-a^2}\,dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int \sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x + \sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,dx = Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\ Tan^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,dx = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+C$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\} + C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x) + C$
- $\int \frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int \frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int \frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int \frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int \frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int \frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int \frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int \frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int \frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

## STANDARD INTEGRALS

- $\int \frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int \frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int \frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2+a^2}\right| + c$
- $\int \frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int \frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int \frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int\sqrt{a^2-x^2}\,dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int\sqrt{x^2-a^2}\,dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x + \sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x+\sqrt{x^2-a^2}\right| + c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x+\sqrt{x^2+a^2}\right| + c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right| + c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right| + c$

- $\int f^{1}\{g(x)\}.g^{1}(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int \frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int \frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int \frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int \frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$ ,
- $\int \frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int \frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int \frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int \frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int \frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int \frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int \frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int \frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int \frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int \frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int \frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$ ,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,dx = Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}\,dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}\,dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}\,dx = \frac{1}{a}\,Tan^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{a^2-x^2}\,dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}\,dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}\,dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}\,dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,dx = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+C$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int \frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int \frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int \frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

**INTEGRATION OF PARTIAL FRACTIONS**

- $\int \frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int \frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int \frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int \frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int \frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int \frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

**STANDARD INTEGRALS**

- $\int \frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int \frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int \frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2+a^2}\right| + c$
- $\int \frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int \frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int \frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int \sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int \sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int \sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x + \sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\} + C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x) + C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2+a^2}\right| + c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x + \sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

**INTEGRATION OF PARTIAL FRACTIONS**

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

**STANDARD INTEGRALS**

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\} + C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x) + C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2+a^2}\right| + c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x + \sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

**INTEGRATION OF PARTIAL FRACTIONS**

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

**STANDARD INTEGRALS**

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\ \mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+C$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int \frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int \frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int \frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int \frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int \frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int \frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int \frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int \frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int \frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int \frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int \frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int \frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int \frac{1}{x^2+a^2}dx = \frac{1}{a}\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int \frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int \frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

**INTEGRATION OF PARTIAL FRACTIONS**

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

**STANDARD INTEGRALS**

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x+\sqrt{x^2-a^2}\right| + c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x+\sqrt{x^2+a^2}\right| + c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right| + c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + C$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\} + C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x) + C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

**INTEGRATION OF PARTIAL FRACTIONS**

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

**STANDARD INTEGRALS**

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2+a^2}\right| + c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x + \sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right)= f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,dx = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,dx = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+C$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right)= f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\ \mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\} + C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x) + C$
- $\int \frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

$= -Cos^{-1}x + c$
- $\int \frac{dx}{1+x^2} = \tan^{-1}x + C$

$= -Cot^{-1}x + c$
- $\int \frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

**INTEGRATION OF PARTIAL FRACTIONS**

- $\int \frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$ ,
- $\int \frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int \frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int \frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int \frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int \frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

**STANDARD INTEGRALS**

- $\int \frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int \frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

$= \log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int \frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

$= \log\left|x + \sqrt{x^2+a^2}\right| + c$
- $\int \frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int \frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int \frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int \sqrt{a^2-x^2}\,dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int \sqrt{x^2-a^2}\,dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

$= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int \sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \mathrm{C}$

$= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x + \sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\} + C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x) + C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2+a^2}\right| + c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x + \sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,dx = Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,Tan^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,dx = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+C$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^{1}\{g(x)\}.g^{1}(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int \frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int \frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int \frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int \frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int \frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int \frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int \frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int \frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int \frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

## STANDARD INTEGRALS

- $\int \frac{1}{\sqrt{a^2-x^2}}\,dx = Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int \frac{1}{\sqrt{x^2-a^2}}\,dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x+\sqrt{x^2-a^2}\right| + c$
- $\int \frac{1}{\sqrt{x^2+a^2}}\,dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x+\sqrt{x^2+a^2}\right| + c$
- $\int \frac{1}{x^2+a^2}\,dx = \frac{1}{a}\,Tan^{-1}\left(\frac{x}{a}\right) + c$
- $\int \frac{1}{a^2-x^2}\,dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int \frac{1}{x^2-a^2}\,dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int \sqrt{a^2-x^2}\,dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int \sqrt{x^2-a^2}\,dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right| + c$
- $\int \sqrt{x^2+a^2}\,dx = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + C$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+C$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\} + C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x) + C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$ ,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2+a^2}\right| + c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x + \sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$ ,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int \frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int \frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int \frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int \frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c,$
- $\int \frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int \frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int \frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int \frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int \frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

## STANDARD INTEGRALS

- $\int \frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int \frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int \frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2+a^2}\right| + c$
- $\int \frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int \frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int \frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int \sqrt{a^2-x^2}\,dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int \sqrt{x^2-a^2}\,dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int \sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x + \sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\} + C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x) + C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2+a^2}\right| + c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x + \sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int \frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int \frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int \frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int \frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int \frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int \frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int \frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int \frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int \frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

## STANDARD INTEGRALS

- $\int \frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int \frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x+\sqrt{x^2-a^2}\right| + c$
- $\int \frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x+\sqrt{x^2+a^2}\right| + c$
- $\int \frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int \frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int \frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int \sqrt{a^2-x^2}\,dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int \sqrt{x^2-a^2}\,dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right| + c$
- $\int \sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + C$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2+a^2}\right| + c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int\sqrt{a^2-x^2}\,dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int\sqrt{x^2-a^2}\,dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x + \sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\} + C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x) + C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\text{dx} = \text{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2+a^2}\right| + c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\text{Tan}^{-1}\left(\frac{x}{a}\right) + \text{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int\sqrt{a^2-x^2}\,dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int\sqrt{x^2-a^2}\,dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int\sqrt{x^2+a^2}\,\text{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \text{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x + \sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c,$
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right)= f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$ ,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x+\sqrt{x^2-a^2}\right| + c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x+\sqrt{x^2+a^2}\right| + c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right| + c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right)= f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int \frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int \frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int \frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

**INTEGRATION OF PARTIAL FRACTIONS**

- $\int \frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int \frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int \frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int \frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int \frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int \frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

**STANDARD INTEGRALS**

- $\int \frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int \frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int \frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2+a^2}\right| + c$
- $\int \frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int \frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int \frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int \sqrt{a^2-x^2}\,dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int \sqrt{x^2-a^2}\,dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int \sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x + \sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int \frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int \frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int \frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int \frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int \frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int \frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int \frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int \frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int \frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

## STANDARD INTEGRALS

- $\int \frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int \frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x+\sqrt{x^2-a^2}\right| + c$
- $\int \frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x+\sqrt{x^2+a^2}\right| + c$
- $\int \frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int \frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int \frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int \sqrt{a^2-x^2}\,dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int \sqrt{x^2-a^2}\,dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right| + c$
- $\int \sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x+\sqrt{x^2-a^2}\right| + c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x+\sqrt{x^2+a^2}\right| + c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right| + c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right| + c$

- $\int f^{1}\{g(x)\}.g^{1}(x)dx = f\{g(x)\} + C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x) + C$
- $\int \frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int \frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int \frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int \frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int \frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int \frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int \frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int \frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int \frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

## STANDARD INTEGRALS

- $\int \frac{1}{\sqrt{a^2-x^2}}\,dx = Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int \frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int \frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2+a^2}\right| + c$
- $\int \frac{1}{x^2+a^2}dx = \frac{1}{a}\,Tan^{-1}\left(\frac{x}{a}\right) + c$
- $\int \frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int \frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int \sqrt{a^2-x^2}\,dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int \sqrt{x^2-a^2}\,dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int \sqrt{x^2+a^2}\,dx = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + C$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x + \sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int \frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int \frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int \frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int \frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int \frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int \frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int \frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int \frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int \frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

## STANDARD INTEGRALS

- $\int \frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int \frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x+\sqrt{x^2-a^2}\right| + c$
- $\int \frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x+\sqrt{x^2+a^2}\right| + c$
- $\int \frac{1}{x^2+a^2}dx = \frac{1}{a}\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int \frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int \frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int \sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int \sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right| + c$
- $\int \sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\} + C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x) + C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

**INTEGRATION OF PARTIAL FRACTIONS**

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

**STANDARD INTEGRALS**

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2+a^2}\right| + c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x + \sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int \frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int \frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int \frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int \frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int \frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int \frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int \frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int \frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int \frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int \frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int \frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int \frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int \frac{1}{x^2+a^2}dx = \frac{1}{a}\ \mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int \frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int \frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}\,dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}\,dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\ \mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

**INTEGRATION OF PARTIAL FRACTIONS**

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

**STANDARD INTEGRALS**

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\text{dx} = \text{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\text{Tan}^{-1}\left(\frac{x}{a}\right)+\text{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\text{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\text{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right)= f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\text{dx} = \text{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\text{Tan}^{-1}\left(\frac{x}{a}\right)+\text{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\text{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\text{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int \frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int \frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int \frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

**INTEGRATION OF PARTIAL FRACTIONS**

- $\int \frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int \frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int \frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int \frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int \frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int \frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

**STANDARD INTEGRALS**

- $\int \frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int \frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int \frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2+a^2}\right| + c$
- $\int \frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int \frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int \frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int \sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int \sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int \sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x + \sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int \frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int \frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int \frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int \frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int \frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int \frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int \frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int \frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int \frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

## STANDARD INTEGRALS

- $\int \frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int \frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int \frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2+a^2}\right| + c$
- $\int \frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int \frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int \frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x + \sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,dx = \text{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\text{Tan}^{-1}\left(\frac{x}{a}\right)+\text{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,dx = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+C$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,dx = Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,Tan^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,dx = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+C$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,dx = Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\ Tan^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,dx = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+C$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^{1}\{g(x)\}.g^{1}(x)dx = f\{g(x)\} + C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x) + C$
- $\int \frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int \frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int \frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

**INTEGRATION OF PARTIAL FRACTIONS**

- $\int \frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int \frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int \frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int \frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int \frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int \frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

**STANDARD INTEGRALS**

- $\int \frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int \frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int \frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2+a^2}\right| + c$
- $\int \frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int \frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int \frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int \sqrt{a^2-x^2}\,dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int \sqrt{x^2-a^2}\,dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int \sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x + \sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

**INTEGRATION OF PARTIAL FRACTIONS**

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

**STANDARD INTEGRALS**

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^{1}\{g(x)\}.g^{1}(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right)= f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int \frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int \frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int \frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int \frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int \frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int \frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int \frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int \frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int \frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

## STANDARD INTEGRALS

- $\int \frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int \frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int \frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2+a^2}\right| + c$
- $\int \frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int \frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int \frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int \sqrt{a^2-x^2}\,dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int \sqrt{x^2-a^2}\,dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int \sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x + \sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\} + C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x) + C$
- $\int \frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$
  $= -Cos^{-1}x + c$
- $\int \frac{dx}{1+x^2} = \tan^{-1}x + C$
  $= -Cot^{-1}x + c$
- $\int \frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int \frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int \frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int \frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int \frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int \frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int \frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

## STANDARD INTEGRALS

- $\int \frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int \frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$
  $= \log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int \frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$
  $= \log\left|x + \sqrt{x^2+a^2}\right| + c$
- $\int \frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int \frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int \frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int\sqrt{a^2-x^2}\,dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int\sqrt{x^2-a^2}\,dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$
  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + C$
  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x + \sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int \frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int \frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int \frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int \frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int \frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int \frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int \frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int \frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int \frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

## STANDARD INTEGRALS

- $\int \frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int \frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int \frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2+a^2}\right| + c$
- $\int \frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int \frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int \frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int \sqrt{a^2-x^2}\,dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int \sqrt{x^2-a^2}\,dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int \sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x + \sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\} + C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x) + C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x + C$

  $= -Cos^{-1}x + c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x + C$

  $= -Cot^{-1}x + c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x + C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right| + c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right| + K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a} - \frac{1}{b}\tan^{-1}\frac{x}{b}\right] + c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right| + c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right| + c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right| + c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right) + c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right) + c$

  $= \log\left|x + \sqrt{x^2+a^2}\right| + c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right) + \mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right| + c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right| + c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2} + \frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right) + c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right) + c$

  $= \frac{x}{2}\sqrt{x^2-a^2} - \frac{a^2}{2}\log\left|x + \sqrt{x^2-a^2}\right| + c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right) + \mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2} + \frac{a^2}{2}\log\left|x + \sqrt{x^2+a^2}\right| + c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

**INTEGRATION OF PARTIAL FRACTIONS**

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

**STANDARD INTEGRALS**

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right)= f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$

- $\int f^1\{g(x)\}.g^1(x)dx = f\{g(x)\}+C$
- $\frac{d}{dx}\left(\int f(x)dx\right) = f(x)$
- $\int\left[\frac{d}{dx}f(x)\right]dx = f(x)+C$
- $\int\frac{dx}{\sqrt{1-x^2}} = Sin^{-1}x+C$

  $= -Cos^{-1}x+c$
- $\int\frac{dx}{1+x^2} = \tan^{-1}x+C$

  $= -Cot^{-1}x+c$
- $\int\frac{dx}{|x|\sqrt{x^2-1}} = Sec^{-1}x+C$

## INTEGRATION OF PARTIAL FRACTIONS

- $\int\frac{1}{(x+a)(x+b)}dx = \frac{1}{b-a}\log\left|\frac{x+a}{x+b}\right|+c$,
- $\int\frac{1}{(ax+b)(cx+d)}dx = \frac{1}{ad-bc}\log\left|\frac{ax+b}{cx+d}\right|+K$
- $\int\frac{1}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{b^2-a^2}\left[\frac{1}{a}\tan^{-1}\frac{x}{a}-\frac{1}{b}\tan^{-1}\frac{x}{b}\right]+c$
- $\int\frac{x}{(x^2+a^2)(x^2+b^2)}dx = \frac{1}{2(b^2-a^2)}\log\left|\frac{x^2+a^2}{x^2+b^2}\right|+c$
- $\int\frac{1}{x(x^n+1)}dx = \frac{1}{n}\log\left|\frac{x^n}{1+x^n}\right|+c$
- $\int\frac{1}{x(1-x^n)}dx = \frac{1}{n}\log\left|\frac{x^n}{1-x^n}\right|+c$

## STANDARD INTEGRALS

- $\int\frac{1}{\sqrt{a^2-x^2}}\,\mathrm{dx} = \mathrm{Sin}^{-1}\left(\frac{x}{a}\right)+c$
- $\int\frac{1}{\sqrt{x^2-a^2}}dx = \cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\frac{1}{\sqrt{x^2+a^2}}dx = Sinh^{-1}\left(\frac{x}{a}\right)+c$

  $= \log\left|x+\sqrt{x^2+a^2}\right|+c$
- $\int\frac{1}{x^2+a^2}dx = \frac{1}{a}\,\mathrm{Tan}^{-1}\left(\frac{x}{a}\right)+\mathrm{c}$
- $\int\frac{1}{a^2-x^2}dx = \frac{1}{2a}\log\left|\frac{a+x}{a-x}\right|+c$
- $\int\frac{1}{x^2-a^2}dx = \frac{1}{2a}\log\left|\frac{x-a}{x+a}\right|+c$
- $\int\sqrt{a^2-x^2}dx = \frac{x}{2}\sqrt{a^2-x^2}+\frac{a^2}{2}Sin^{-1}\left(\frac{x}{a}\right)+c$
- $\int\sqrt{x^2-a^2}dx = \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}Cosh^{-1}\left(\frac{x}{a}\right)+c$

  $= \frac{x}{2}\sqrt{x^2-a^2}-\frac{a^2}{2}\log\left|x+\sqrt{x^2-a^2}\right|+c$
- $\int\sqrt{x^2+a^2}\,\mathrm{dx} = \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\sinh^{-1}\left(\frac{x}{a}\right)+\mathrm{C}$

  $= \frac{x}{2}\sqrt{x^2+a^2}+\frac{a^2}{2}\log\left|x+\sqrt{x^2+a^2}\right|+c$