전기스쿨

나의 강의실　커뮤니티　고객센터　인터넷강의　강좌평가　수강신청　강의교재📖

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궁금하신 점은 무엇이든 물어보는 **상담센터**

학생과 학부모, 학생들끼리의 다양한 고민거리를 상담해드립니다.

2019 업그레이드 생방송

김대호기술사 1:1 개인교육

커뮤니티

우리들의 이야기 / 정보공유 / 무료학습자료

| 합격수기 | 무료학습 | 학습자료 | 기출문제 자료실 | 문제복원 자료실 | 문제복원 QNA | 자유게시판 |

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− 글자작게　＋ 글자크게

적분공식 총정리 ｜ 학습자료　　　　　　　　　　　　　　　2019-03-19 04:29:39

작성자 김대호　　　　　　　　　　　　　　　　　조회 1 ｜ 추천 0

$$\int \sin ax \; dx = -\frac{\cos ax}{a}$$

$$\int x \sin ax \; dx = \frac{\sin ax}{a^2} - \frac{x \cos ax}{a}$$

$$\int x^2 \sin ax \; dx = \frac{2x}{a^2} \sin ax + \left(\frac{2}{a^3} - \frac{x^2}{a}\right) \cos ax$$

$$\int x^3 \sin ax \; dx = \left(\frac{3x^2}{a^2} - \frac{6}{a^4}\right) \sin ax + \left(\frac{6x}{a^3} - \frac{x^3}{a}\right) \cos ax$$

$$\int \frac{\sin ax}{x} dx = ax - \frac{(ax)^3}{3 \cdot 3!} + \frac{(ax)^5}{5 \cdot 5!} - \cdots$$

$$\int \frac{\sin ax}{x^2} dx = -\frac{\sin ax}{x} + a \int \frac{\cos ax}{x} dx \qquad \text{[see 14.373]}$$

$$\int \frac{dx}{\sin ax} = \frac{1}{a} \ln (\csc ax - \cot ax) = \frac{1}{a} \ln \tan \frac{ax}{2}$$

$$\int \frac{x \; dx}{\sin ax} = \frac{1}{a^2} \left\{ ax + \frac{(ax)^3}{18} + \frac{7(ax)^5}{1800} + \cdots + \frac{2(2^{2n-1} - 1)B_n(ax)^{2n+1}}{(2n+1)!} + \cdots \right\}$$

$$\int \sin^2 ax \; dx = \frac{x}{2} - \frac{\sin 2ax}{4a}$$

$$\int x \sin^2 ax \; dx = \frac{x^2}{4} - \frac{x \sin 2ax}{4a} - \frac{\cos 2ax}{8a^2}$$

$$\int \sin^3 ax \; dx = -\frac{\cos ax}{a} + \frac{\cos^3 ax}{3a}$$

$$\int \sin^4 ax \; dx = \frac{3x}{8} - \frac{\sin 2ax}{4a} + \frac{\sin 4ax}{32a}$$

$$\int \frac{dx}{\sin^2 ax} = -\frac{1}{a} \cot ax$$

$$\int \frac{dx}{\sin^3 ax} = -\frac{\cos ax}{2a \sin^2 ax} + \frac{1}{2a} \ln \tan \frac{ax}{2}$$

$$\int \sin px \sin qx \; dx = \frac{\sin (p-q)x}{2(p-q)} - \frac{\sin (p+q)x}{2(p+q)} \qquad \text{[If } p = \text{:}$$

$$\int \frac{dx}{1 - \sin ax} = \frac{1}{a} \tan \left(\frac{\pi}{4} + \frac{ax}{2}\right)$$

$$\int \frac{x\,dx}{1 - \sin ax} = \frac{x}{a}\tan\left(\frac{\pi}{4} + \frac{ax}{2}\right) + \frac{2}{a^2}\ln\sin\left(\frac{\pi}{4} - \frac{ax}{2}\right)$$

$$\int \frac{dx}{1 + \sin ax} = -\frac{1}{a}\tan\left(\frac{\pi}{4} - \frac{ax}{2}\right)$$

$$\int \frac{x\,dx}{1 + \sin ax} = -\frac{x}{a}\tan\left(\frac{\pi}{4} - \frac{ax}{2}\right) + \frac{2}{a^2}\ln\sin\left(\frac{\pi}{4} + \frac{ax}{2}\right)$$

$$\int \frac{dx}{(1 - \sin ax)^2} = \frac{1}{2a}\tan\left(\frac{\pi}{4} + \frac{ax}{2}\right) + \frac{1}{6a}\tan^3\left(\frac{\pi}{4} + \frac{ax}{2}\right)$$

$$\int \frac{dx}{(1 + \sin ax)^2} = -\frac{1}{2a}\tan\left(\frac{\pi}{4} - \frac{ax}{2}\right) - \frac{1}{6a}\tan^3\left(\frac{\pi}{4} - \frac{ax}{2}\right)$$

$$\int \frac{dx}{p + q\sin ax} = \begin{cases} \dfrac{2}{a\sqrt{p^2 - q^2}}\tan^{-1}\dfrac{p\tan\frac{1}{2}ax + q}{\sqrt{p^2 - q^2}} \\[3ex] \dfrac{1}{a\sqrt{q^2 - p^2}}\ln\left(\dfrac{p\tan\frac{1}{2}ax + q - \sqrt{q^2 - p^2}}{p\tan\frac{1}{2}ax + q + \sqrt{q^2 - p^2}}\right) \end{cases}$$

$$\int \frac{dx}{(p + q\sin ax)^2} = \frac{q\cos ax}{a(p^2 - q^2)(p + q\sin ax)} + \frac{p}{p^2 - q^2}\int \frac{dx}{p + q\sin ax}$$

$$\int \frac{dx}{p^2 + q^2\sin^2 ax} = \frac{1}{ap\sqrt{p^2 + q^2}}\tan^{-1}\frac{\sqrt{p^2 + q^2}\tan ax}{p}$$

$$\int \frac{dx}{p^2 - q^2\sin^2 ax} = \begin{cases} \dfrac{1}{ap\sqrt{p^2 - q^2}}\tan^{-1}\dfrac{\sqrt{p^2 - q^2}\tan ax}{p} \\[3ex] \dfrac{1}{2ap\sqrt{q^2 - p^2}}\ln\left(\dfrac{\sqrt{q^2 - p^2}\tan ax + p}{\sqrt{q^2 - p^2}\tan ax - p}\right) \end{cases}$$

$$\int x^m \sin ax\,dx = -\frac{x^m\cos ax}{a} + \frac{mx^{m-1}\sin ax}{a^2} - \frac{m(m-1)}{a^2}\int x^{m-2}\sin ax\,dx$$

$$\int \frac{\sin ax}{x^n}\,dx = -\frac{\sin ax}{(n-1)x^{n-1}} + \frac{a}{n-1}\int \frac{\cos ax}{x^{n-1}}\,dx$$

$$\int \sin^n ax\,dx = -\frac{\sin^{n-1}ax\cos ax}{an} + \frac{n-1}{n}\int \sin^{n-2}ax\,dx$$

$$\int \frac{dx}{\sin^n ax} = \frac{-\cos ax}{a(n-1)\sin^{n-1}ax} + \frac{n-2}{n-1}\int \frac{dx}{\sin^{n-2}ax}$$

$$\int \frac{x\,dx}{\sin^n ax} = \frac{-x\cos ax}{a(n-1)\sin^{n-1}ax} - \frac{1}{a^2(n-1)(n-2)\sin^{n-2}ax} + \frac{n-2}{n-1}\int \frac{x\,dx}{\sin^{n-2}ax}$$

$$\int \cos ax\,dx = \frac{\sin ax}{a}$$

$$\int x\cos ax\,dx = \frac{\cos ax}{a^2} + \frac{x\sin ax}{a}$$

$$\int x^2\cos ax\,dx = \frac{2x}{a^2}\cos ax + \left(\frac{x^2}{a} - \frac{2}{a^3}\right)\sin ax$$

$$\int x^3\cos ax\,dx = \left(\frac{3x^2}{a^2} - \frac{6}{a^4}\right)\cos ax + \left(\frac{x^3}{a} - \frac{6x}{a^3}\right)\sin ax$$

$$\int \frac{\cos ax}{x}\,dx = \ln x - \frac{(ax)^2}{2\cdot 2!} + \frac{(ax)^4}{4\cdot 4!} - \frac{(ax)^6}{6\cdot 6!} + \cdots$$

$$\int \frac{\cos ax}{x^2}\,dx = -\frac{\cos ax}{x} - a\int \frac{\sin ax}{x}\,dx \qquad \text{[See 14.343]}$$

$$\int \frac{dx}{\cos ax} = \frac{1}{a}\ln(\sec ax + \tan ax) = \frac{1}{a}\ln\tan\left(\frac{\pi}{4} + \frac{ax}{2}\right)$$

$$\int \frac{x\,dx}{\cos ax} = \frac{1}{a^2}\left\{\frac{(ax)^2}{2} + \frac{(ax)^4}{8} + \frac{5(ax)^6}{144} + \cdots + \frac{E_n(ax)^{2n+2}}{(2n+2)(2n)!} + \cdots\right\}$$

$$\int \cos^2 ax\,dx = \frac{x}{2} + \frac{\sin 2ax}{4a}$$

$$\int x\cos^2 ax\,dx = \frac{x^2}{4} + \frac{x\sin 2ax}{4a} + \frac{\cos 2ax}{8a^2}$$

$$\int \cos^3 ax\,dx = \frac{\sin ax}{a} - \frac{\sin^3 ax}{3a}$$

$$\int \cos^4 ax\,dx = \frac{3x}{8} + \frac{\sin 2ax}{4a} + \frac{\sin 4ax}{32a}$$

$$\int \frac{dx}{\cos^2 ax} = \frac{\tan ax}{a}$$

$$\int \frac{dx}{\cos^3 ax} = \frac{\sin ax}{2a \cos^2 ax} + \frac{1}{2a} \ln \tan \left(\frac{\pi}{4} + \frac{ax}{2} \right)$$

$$\int \cos ax \cos px \; dx = \frac{\sin (a-p)x}{2(a-p)} + \frac{\sin (a+p)x}{2(a+p)}$$

$$\int \frac{dx}{1 - \cos ax} = -\frac{1}{a} \cot \frac{ax}{2}$$

$$\int \frac{x \, dx}{1 - \cos ax} = -\frac{x}{a} \cot \frac{ax}{2} + \frac{2}{a^2} \ln \sin \frac{ax}{2}$$

$$\int \frac{dx}{1 + \cos ax} = \frac{1}{a} \tan \frac{ax}{2}$$

$$\int \frac{x \, dx}{1 + \cos ax} = \frac{x}{a} \tan \frac{ax}{2} + \frac{2}{a^2} \ln \cos \frac{ax}{2}$$

$$\int \frac{dx}{(1 - \cos ax)^2} = -\frac{1}{2a} \cot \frac{ax}{2} - \frac{1}{6a} \cot^3 \frac{ax}{2}$$

$$\int \frac{dx}{(1 + \cos ax)^2} = \frac{1}{2a} \tan \frac{ax}{2} + \frac{1}{6a} \tan^3 \frac{ax}{2}$$

$$\int x^m \cos ax \; dx = \frac{x^m \sin ax}{a} + \frac{mx^{m-1}}{a^2} \cos ax - \frac{m(m-1)}{a^2} \int x^{m-2} \cos ax \; dx$$

$$\int \frac{\cos ax}{x^n} \; dx = -\frac{\cos ax}{(n-1)x^{n-1}} - \frac{a}{n-1} \int \frac{\sin ax}{x^{n-1}} \; dx$$

$$\int \cos^n ax \; dx = \frac{\sin ax \cos^{n-1} ax}{an} + \frac{n-1}{n} \int \cos^{n-2} ax \; dx$$

$$\int \frac{dx}{\cos^n ax} = \frac{\sin ax}{a(n-1) \cos^{n-1} ax} + \frac{n-2}{n-1} \int \frac{dx}{\cos^{n-2} ax}$$

$$\int \frac{x \, dx}{\cos^n ax} = \frac{x \sin ax}{a(n-1) \cos^{n-1} ax} - \frac{1}{a^2(n-1)(n-2) \cos^{n-2} ax} + \frac{n-2}{n-1} \int \frac{x \, dx}{\cos^{n-2} ax}$$

$$\int \sin ax \cos ax \, dx = \frac{\sin^2 ax}{2a}$$

$$\int \sin px \cos qx \, dx = -\frac{\cos (p-q)x}{2(p-q)} - \frac{\cos (p+q)x}{2(p+q)}$$

$$\int \sin^n ax \cos ax \, dx = \frac{\sin^{n+1} ax}{(n+1)a}$$

$$\int \cos^n ax \sin ax \, dx = -\frac{\cos^{n+1} ax}{(n+1)a}$$

$$\int \sin^2 ax \cos^2 ax \, dx = \frac{x}{8} - \frac{\sin 4ax}{32a}$$

$$\int \frac{dx}{\sin ax \cos ax} = \frac{1}{a} \ln \tan ax$$

$$\int \frac{dx}{\sin^2 ax \cos ax} = \frac{1}{a} \ln \tan \left(\frac{\pi}{4} + \frac{ax}{2} \right) - \frac{1}{a \sin ax}$$

$$\int \frac{dx}{\sin ax \cos^2 ax} = \frac{1}{a} \ln \tan \frac{ax}{2} + \frac{1}{a \cos ax}$$

$$\int \frac{dx}{\sin^2 ax \cos^2 ax} = -\frac{2 \cot 2ax}{a}$$

$$\int \frac{\sin^2 ax}{\cos ax} \, dx = -\frac{\sin ax}{a} + \frac{1}{a} \ln \tan \left(\frac{ax}{2} + \frac{\pi}{4} \right)$$

$$\int \frac{\cos^2 ax}{\sin ax} \, dx = \frac{\cos ax}{a} + \frac{1}{a} \ln \tan \frac{ax}{2}$$

$$\int \frac{dx}{\cos ax(1 \pm \sin ax)} = \mp \frac{1}{2a(1 \pm \sin ax)} + \frac{1}{2a} \ln \tan \left(\frac{ax}{2} + \frac{\pi}{4} \right)$$

$$\int \frac{dx}{\sin ax(1 \pm \cos ax)} = \pm \frac{1}{2a(1 \pm \cos ax)} + \frac{1}{2a} \ln \tan \frac{ax}{2}$$

$$\int \frac{dx}{\sin ax \pm \cos ax} = \frac{1}{a\sqrt{2}} \ln \tan \left(\frac{ax}{2} \pm \frac{\pi}{8} \right)$$

$$\int \frac{\sin ax \, dx}{\sin ax \pm \cos ax} = \frac{x}{2} \mp \frac{1}{2a} \ln (\sin ax \pm \cos ax)$$

$$\int \frac{\cos ax \, dx}{\sin ax \pm \cos ax} = \pm \frac{x}{2} + \frac{1}{2a} \ln (\sin ax \pm \cos ax)$$

$$\int \frac{\sin ax \, dx}{p + q \cos ax} = -\frac{1}{aq} \ln (p + q \cos ax)$$

$$\int \frac{\cos ax \, dx}{p + q \sin ax} = \frac{1}{aq} \ln (p + q \sin ax)$$

$$\int \frac{\sin ax \, dx}{(p + q \cos ax)^n} = \frac{1}{aq(n-1)(p + q \cos ax)^{n-1}}$$

$$\int \frac{\cos ax \, dx}{(p + q \sin ax)^n} = \frac{-1}{aq(n-1)(p + q \sin ax)^{n-1}}$$

$$\int \frac{dx}{p \sin ax + q \cos ax} = \frac{1}{a\sqrt{p^2 + q^2}} \ln \tan \left(\frac{ax + \tan^{-1}(q/p)}{2} \right)$$

$$\int \sin^m ax \cos^n ax \, dx = \begin{cases} -\dfrac{\sin^{m-1} ax \cos^{n+1} ax}{a(m+n)} + \dfrac{m-1}{m+n} \displaystyle\int \sin^{m-2} ax \cos^n ax \, dx \\[2ex] \dfrac{\sin^{m+1} ax \cos^{n-1} ax}{a(m+n)} + \dfrac{n-1}{m+n} \displaystyle\int \sin^m ax \cos^{n-2} ax \, dx \end{cases}$$

$$\int \frac{\sin^m ax}{\cos^n ax} \, dx = \begin{cases} \dfrac{\sin^{m-1} ax}{a(n-1) \cos^{n-1} ax} - \dfrac{m-1}{n-1} \displaystyle\int \dfrac{\sin^{m-2} ax}{\cos^{n-2} ax} \, dx \\[2ex] \dfrac{\sin^{m+1} ax}{a(n-1) \cos^{n-1} ax} - \dfrac{m-n+2}{n-1} \displaystyle\int \dfrac{\sin^m ax}{\cos^{n-2} ax} \, dx \\[2ex] \dfrac{-\sin^{m-1} ax}{a(m-n) \cos^{n-1} ax} + \dfrac{m-1}{m-n} \displaystyle\int \dfrac{\sin^{m-2} ax}{\cos^n ax} \, dx \end{cases}$$

$$\int \frac{\cos^m ax}{\sin^n ax} \, dx = \begin{cases} \dfrac{-\cos^{m-1} ax}{a(n-1) \sin^{n-1} ax} - \dfrac{m-1}{n-1} \displaystyle\int \dfrac{\cos^{m-2} ax}{\sin^{n-2} ax} \, dx \\[2ex] \dfrac{-\cos^{m+1} ax}{a(n-1) \sin^{n-1} ax} - \dfrac{m-n+2}{n-1} \displaystyle\int \dfrac{\cos^m ax}{\sin^{n-2} ax} \, dx \\[2ex] \dfrac{\cos^{m-1} ax}{a(m-n) \sin^{n-1} ax} + \dfrac{m-1}{m-n} \displaystyle\int \dfrac{\cos^{m-2} ax}{\sin^n ax} \, dx \end{cases}$$

$$\int \frac{dx}{\sin^m ax \cos^n ax} = \begin{cases} \dfrac{1}{a(n-1)\sin^{m-1} ax \cos^{n-1} ax} + \dfrac{m+n-2}{n-1} \displaystyle\int \dfrac{dx}{\sin^m ax \cos^{n-2} ax} \\[3ex] \dfrac{-1}{a(m-1)\sin^{m-1} ax \cos^{n-1} ax} + \dfrac{m+n-2}{m-1} \displaystyle\int \dfrac{dx}{\sin^{m-2} ax \cos^n ax} \end{cases}$$

$$\int \tan ax \, dx = -\frac{1}{a} \ln \cos ax = \frac{1}{a} \ln \sec ax$$

$$\int \tan^2 ax \, dx = \frac{\tan ax}{a} - x$$

$$\int \tan^3 ax \, dx = \frac{\tan^2 ax}{2a} + \frac{1}{a} \ln \cos ax$$

$$\int \tan^n ax \, \sec^2 ax \, dx = \frac{\tan^{n+1} ax}{(n+1)a}$$

$$\int \frac{\sec^2 ax}{\tan ax} \, dx = \frac{1}{a} \ln \tan ax$$

$$\int \frac{dx}{\tan ax} = \frac{1}{a} \ln \sin ax$$

$$\int x \tan ax \, dx = \frac{1}{a^2} \left\{ \frac{(ax)^3}{3} + \frac{(ax)^5}{15} + \frac{2(ax)^7}{105} + \cdots + \frac{2^{2n}(2^{2n}-1)B_n (ax)^{2n+1}}{(2n+1)!} + \cdots \right\}$$

$$\int \frac{\tan ax}{x} \, dx = ax + \frac{(ax)^3}{9} + \frac{2(ax)^5}{75} + \cdots + \frac{2^{2n}(2^{2n}-1)B_n (ax)^{2n-1}}{(2n-1)(2n)!} + \cdots$$

$$\int x \tan^2 ax \, dx = \frac{x \tan ax}{a} + \frac{1}{a^2} \ln \cos ax - \frac{x^2}{2}$$

$$\int \frac{dx}{p + q \tan ax} = \frac{px}{p^2+q^2} + \frac{q}{a(p^2+q^2)} \ln (q \sin ax + p \cos ax)$$

$$\int \frac{dx}{p + q \cot ax} = \frac{px}{p^2 + q^2} - \frac{q}{a(p^2 + q^2)} \ln (p \sin ax + q \cos ax)$$

$$\int \cot^n ax \, dx = -\frac{\cot^{n-1} ax}{(n-1)a} - \int \cot^{n-2} ax \, dx$$

$$\int \sec ax \, dx = \frac{1}{a} \ln (\sec ax + \tan ax) = \frac{1}{a} \ln \tan \left(\frac{ax}{2} + \frac{\pi}{4} \right)$$

$$\int \sec^2 ax \, dx = \frac{\tan ax}{a}$$

$$\int \sec^3 ax \, dx = \frac{\sec ax \tan ax}{2a} + \frac{1}{2a} \ln (\sec ax + \tan ax)$$

$$\int \sec^n ax \tan ax \, dx = \frac{\sec^n ax}{na}$$

$$\int \frac{dx}{\sec ax} = \frac{\sin ax}{a}$$

$$\int x \sec ax \, dx = \frac{1}{a^2} \left\{ \frac{(ax)^2}{2} + \frac{(ax)^4}{8} + \frac{5(ax)^6}{144} + \cdots + \frac{E_n(ax)^{2n+2}}{(2n+2)(2n)!} + \cdots \right\}$$

$$\int \frac{\sec ax}{x} \, dx = \ln x + \frac{(ax)^2}{4} + \frac{5(ax)^4}{96} + \frac{61(ax)^6}{4320} + \cdots + \frac{E_n(ax)^{2n}}{2n(2n)!} + \cdots$$

$$\int x \sec^2 ax \, dx = \frac{x}{a} \tan ax + \frac{1}{a^2} \ln \cos ax$$

$$\int \frac{dx}{q + p \sec ax} = \frac{x}{q} - \frac{p}{q} \int \frac{dx}{p + q \cos ax}$$

$$\int \sec^n ax \, dx = \frac{\sec^{n-2} ax \tan ax}{a(n-1)} + \frac{n-2}{n-1} \int \sec^{n-2} ax \, dx$$

$$\int \csc ax \, dx = \frac{1}{a} \ln (\csc ax - \cot ax) = \frac{1}{a} \ln \tan \frac{ax}{2}$$

$$\int \csc^2 ax \, dx = -\frac{\cot ax}{a}$$

$$\int \csc^3 ax \, dx = -\frac{\csc ax \cot ax}{2a} + \frac{1}{2a} \ln \tan \frac{ax}{2}$$

$$\int \csc^n ax \cot ax \, dx = -\frac{\csc^n ax}{na}$$

$$\int \frac{dx}{\csc ax} = -\frac{\cos ax}{a}$$

$$\int x \csc ax \, dx = \frac{1}{a^2} \left\{ ax + \frac{(ax)^3}{18} + \frac{7(ax)^5}{1800} + \cdots + \frac{2(2^{2n-1} - 1)B_n(ax)^{2n+1}}{(2n+1)!} + \cdots \right\}$$

$$\int \frac{\csc ax}{x} \, dx = -\frac{1}{ax} + \frac{ax}{6} + \frac{7(ax)^3}{1080} + \cdots + \frac{2(2^{2n-1} - 1)B_n(ax)^{2n-1}}{(2n-1)(2n)!} + \cdots$$

$$\int x \csc^2 ax \, dx = -\frac{x \cot ax}{a} + \frac{1}{a^2} \ln \sin ax$$

$$\int \frac{dx}{q + p \csc ax} = \frac{x}{q} - \frac{p}{q} \int \frac{dx}{p + q \sin ax}$$

$$\int \csc^n ax \, dx = -\frac{\csc^{n-2} ax \cot ax}{a(n-1)} + \frac{n-2}{n-1} \int \csc^{n-2} ax \, dx$$

$$\int \sin^{-1}\frac{x}{a}\,dx = x\sin^{-1}\frac{x}{a} + \sqrt{a^2 - x^2}$$

$$\int x\sin^{-1}\frac{x}{a}\,dx = \left(\frac{x^2}{2} - \frac{a^2}{4}\right)\sin^{-1}\frac{x}{a} + \frac{x\sqrt{a^2 - x^2}}{4}$$

$$\int x^2\sin^{-1}\frac{x}{a}\,dx = \frac{x^3}{3}\sin^{-1}\frac{x}{a} + \frac{(x^2 + 2a^2)\sqrt{a^2 - x^2}}{9}$$

$$\int \frac{\sin^{-1}(x/a)}{x}\,dx = \frac{x}{a} + \frac{(x/a)^3}{2 \cdot 3 \cdot 3} + \frac{1 \cdot 3(x/a)^5}{2 \cdot 4 \cdot 5 \cdot 5} + \frac{1 \cdot 3 \cdot 5(x/a)^7}{2 \cdot 4 \cdot 6 \cdot 7 \cdot 7} + \cdots$$

$$\int \frac{\sin^{-1}(x/a)}{x^2}\,dx = -\frac{\sin^{-1}(x/a)}{x} - \frac{1}{a}\ln\left(\frac{a + \sqrt{a^2 - x^2}}{x}\right)$$

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

$$\int \cos^{-1}\frac{x}{a}\,dx = x\cos^{-1}\frac{x}{a} - \sqrt{a^2 - x^2}$$

$$\int x\cos^{-1}\frac{x}{a}\,dx = \left(\frac{x^2}{2} - \frac{a^2}{4}\right)\cos^{-1}\frac{x}{a} - \frac{x\sqrt{a^2 - x^2}}{4}$$

$$\int x^2\cos^{-1}\frac{x}{a}\,dx = \frac{x^3}{3}\cos^{-1}\frac{x}{a} - \frac{(x^2 + 2a^2)\sqrt{a^2 - x^2}}{9}$$

$$\int \frac{\cos^{-1}(x/a)}{x}\,dx = \frac{\pi}{2}\ln x - \int \frac{\sin^{-1}(x/a)}{x}\,dx$$

$$\int \frac{\cos^{-1}(x/a)}{x^2}\,dx = -\frac{\cos^{-1}(x/a)}{x} + \frac{1}{a}\ln\left(\frac{a + \sqrt{a^2 - x^2}}{x}\right)$$

$$\int \left(\cos^{-1}\frac{x}{a}\right)^2 dx = x\left(\cos^{-1}\frac{x}{a}\right)^2 - 2x - 2\sqrt{a^2 - x^2}\cos^{-1}\frac{x}{a}$$

$$\int \tan^{-1}\frac{x}{a}\,dx = x\tan^{-1}\frac{x}{a} - \frac{a}{2}\ln(x^2 + a^2)$$

$$\int x\tan^{-1}\frac{x}{a}\,dx = \tfrac{1}{2}(x^2 + a^2)\tan^{-1}\frac{x}{a} - \frac{ax}{2}$$

$$\int x^2 \tan^{-1}\frac{x}{a}\, dx = \frac{x^3}{3}\tan^{-1}\frac{x}{a} - \frac{ax^2}{6} + \frac{a^3}{6}\ln(x^2+a^2)$$

$$\int \frac{\tan^{-1}(x/a)}{x}\, dx = \frac{x}{a} - \frac{(x/a)^3}{3^2} + \frac{(x/a)^5}{5^2} - \frac{(x/a)^7}{7^2} + \cdots$$

$$\int \frac{\tan^{-1}(x/a)}{x^2}\, dx = -\frac{1}{x}\tan^{-1}\frac{x}{a} - \frac{1}{2a}\ln\left(\frac{x^2+a^2}{x^2}\right)$$

$$\int \cot^{-1}\frac{x}{a}\, dx = x\cot^{-1}\frac{x}{a} + \frac{a}{2}\ln(x^2+a^2)$$

$$\int x\cot^{-1}\frac{x}{a}\, dx = \tfrac{1}{2}(x^2+a^2)\cot^{-1}\frac{x}{a} + \frac{ax}{2}$$

$$\int x^m \sin^{-1}\frac{x}{a}\, dx = \frac{x^{m+1}}{m+1}\sin^{-1}\frac{x}{a} - \frac{1}{m+1}\int \frac{x^{m+1}}{\sqrt{a^2-x^2}}\, dx$$

$$\int x^m \cos^{-1}\frac{x}{a}\, dx = \frac{x^{m+1}}{m+1}\cos^{-1}\frac{x}{a} + \frac{1}{m+1}\int \frac{x^{m+1}}{\sqrt{a^2-x^2}}\, dx$$

$$\int x^m \tan^{-1}\frac{x}{a}\, dx = \frac{x^{m+1}}{m+1}\tan^{-1}\frac{x}{a} - \frac{a}{m+1}\int \frac{x^{m+1}}{x^2+a^2}\, dx$$

$$\int x^m \cot^{-1}\frac{x}{a}\, dx = \frac{x^{m+1}}{m+1}\cot^{-1}\frac{x}{a} + \frac{a}{m+1}\int \frac{x^{m+1}}{x^2+a^2}\, dx$$

$$\int e^{ax}\, dx = \frac{e^{ax}}{a}$$

$$\int xe^{ax}\, dx = \frac{e^{ax}}{a}\left(x - \frac{1}{a}\right)$$

$$\int x^2 e^{ax}\, dx = \frac{e^{ax}}{a}\left(x^2 - \frac{2x}{a} + \frac{2}{a^2}\right)$$

$$\int x^n e^{ax}\,dx \;=\; \frac{x^n e^{ax}}{a} \;-\; \frac{n}{a}\int x^{n-1}e^{ax}\,dx$$

$$=\; \frac{e^{ax}}{a}\left(x^n - \frac{nx^{n-1}}{a} + \frac{n(n-1)x^{n-2}}{a^2} - \cdots \frac{(-1)^n n!}{a^n}\right)$$

$$\int \frac{e^{ax}}{x}\,dx \;=\; \ln x + \frac{ax}{1\cdot 1!} + \frac{(ax)^2}{2\cdot 2!} + \frac{(ax)^3}{3\cdot 3!} + \cdots$$

$$\int \frac{e^{ax}}{x^n}\,dx \;=\; \frac{-e^{ax}}{(n-1)x^{n-1}} + \frac{a}{n-1}\int \frac{e^{ax}}{x^{n-1}}\,dx$$

$$\int \frac{dx}{p + qe^{ax}} \;=\; \frac{x}{p} - \frac{1}{ap}\ln\left(p + qe^{ax}\right)$$

$$\int \frac{dx}{(p + qe^{ax})^2} \;=\; \frac{x}{p^2} + \frac{1}{ap(p+qe^{ax})} - \frac{1}{ap^2}\ln\left(p + qe^{ax}\right)$$

$$\int \frac{dx}{pe^{ax} + qe^{-ax}} \;=\; \begin{cases} \dfrac{1}{a\sqrt{pq}}\tan^{-1}\left(\sqrt{\dfrac{p}{q}}\,e^{ax}\right) \\[3ex] \dfrac{1}{2a\sqrt{-pq}}\ln\left(\dfrac{e^{ax} - \sqrt{-q/p}}{e^{ax} + \sqrt{-q/p}}\right) \end{cases}$$

$$\int e^{ax}\sin bx\,dx \;=\; \frac{e^{ax}(a\sin bx - b\cos bx)}{a^2 + b^2}$$

$$\int e^{ax}\cos bx\,dx \;=\; \frac{e^{ax}(a\cos bx + b\sin bx)}{a^2 + b^2}$$

$$\int xe^{ax}\sin bx\,dx \;=\; \frac{xe^{ax}(a\sin bx - b\cos bx)}{a^2 + b^2} - \frac{e^{ax}\{(a^2 - b^2)\sin bx - 2ab\cos bx\}}{(a^2 + b^2)^2}$$

$$\int xe^{ax}\cos bx\,dx \;=\; \frac{xe^{ax}(a\cos bx + b\sin bx)}{a^2 + b^2} - \frac{e^{ax}\{(a^2 - b^2)\cos bx + 2ab\sin bx\}}{(a^2 + b^2)^2}$$

$$\int e^{ax}\ln x\,dx \;=\; \frac{e^{ax}\ln x}{a} - \frac{1}{a}\int \frac{e^{ax}}{x}\,dx$$

$$\int e^{ax} \sin^n bx \, dx = \frac{e^{ax} \sin^{n-1} bx}{a^2 + n^2 b^2}(a \sin bx - nb \cos bx) + \frac{n(n-1)b^2}{a^2 + n^2 b^2} \int e^{ax} \sin^{n-2} bx \, dx$$

$$\int e^{ax} \cos^n bx \, dx = \frac{e^{ax} \cos^{n-1} bx}{a^2 + n^2 b^2}(a \cos bx + nb \sin bx) + \frac{n(n-1)b^2}{a^2 + n^2 b^2} \int e^{ax} \cos^{n-2} bx \, dx$$

$$\int \ln x \, dx = x \ln x - x$$

$$\int x \ln x \, dx = \frac{x^2}{2}\left(\ln x - \frac{1}{2}\right)$$

$$\int x^m \ln x \, dx = \frac{x^{m+1}}{m+1}\left(\ln x - \frac{1}{m+1}\right)$$

$$\int \frac{\ln x}{x} \, dx = \frac{1}{2}\ln^2 x$$

$$\int \frac{\ln x}{x^2} \, dx = -\frac{\ln x}{x} - \frac{1}{x}$$

$$\int \ln^2 x \, dx = x \ln^2 x - 2x \ln x + 2x$$

$$\int \frac{\ln^n x \, dx}{x} = \frac{\ln^{n+1} x}{n+1}$$

$$\int \frac{dx}{x \ln x} = \ln(\ln x)$$

$$\int \frac{dx}{\ln x} = \ln(\ln x) + \ln x + \frac{\ln^2 x}{2 \cdot 2!} + \frac{\ln^3 x}{3 \cdot 3!} + \cdots$$

$$\int \frac{x^m \, dx}{\ln x} = \ln(\ln x) + (m+1)\ln x + \frac{(m+1)^2 \ln^2 x}{2 \cdot 2!} + \frac{(m+1)^3 \ln^3 x}{3 \cdot 3!} + \cdots$$

$$\int \ln^n x \, dx = x \ln^n x - n \int \ln^{n-1} x \, dx$$

$$\int x^m \ln^n x \, dx = \frac{x^{m+1} \ln^n x}{m+1} - \frac{n}{m+1} \int x^m \ln^{n-1} x \, dx$$

$$\int \ln(x^2 + a^2) \, dx = x \ln(x^2 + a^2) - 2x + 2a \tan^{-1}\frac{x}{a}$$

$$\int \ln(x^2 - a^2) \, dx = x \ln(x^2 - a^2) - 2x + a \ln\left(\frac{x+a}{x-a}\right)$$

$$\int x^m \ln(x^2 \pm a^2) \, dx = \frac{x^{m+1} \ln(x^2 \pm a^2)}{m+1} - \frac{2}{m+1} \int \frac{x^{m+2}}{x^2 \pm a^2} \, dx$$

댓글쓰기

번호	제목	등록인	등록일	추천수	조회수	비고
833	[기사필기] 적분공식 총정리 N (0)	김대호	2019-03-19	0	1	
832	[기사실기] NVS N (0)	김대호	2019-03-11	0	59	
831	[기사실기] 접지극 붙이 콘센트와 접지단자 붙이 콘센트 N (0)	김대호	2019-03-09	0	60	

830	[기사실기] 역률개선의 원리 (0)	김대호	2019-03-05	0	60	
829	[기사실기] 섹쇼널라이저 (자동 선로 구분 개폐기) (0)	김대호	2019-03-04	0	43	
828	[기사실기] 단상3선식 변압기 (0)	김대호	2019-02-28	0	68	
827	[기사실기] 위험장소의 분류(Classification of locations) (0)	김대호	2019-02-28	0	76	
826	[기사실기] 방폭구조의 종류(Type of explosion proof) (0)	김대호	2019-02-28	0	55	
825	[기사실기] 반발전동기 (0)	김대호	2019-02-14	0	49	
824	[기사필기] 지수함수의 미분과 적분 (0)	김대호	2019-02-05	0	71	
823	[기사실기] 평행 두 도선사이의 정전용량 증명 / 선로정수중 작용정전용량의 증명 (0)	김대호	2019-02-01	0	65	
822	[기사실기] 연립방정식 행렬로 풀기 / 가우스 소거법 / 크래머 방식 (0)	김대호	2019-01-30	0	45	
821	[기사실기] 삼각함수 (0)	김대호	2018-12-20	0	120	
820	[기사실기] CTT의 연결 / 전류시험단자 연결 (0)	김대호	2018-11-23	0	182	
819	[기사실기] 견적 / 설계서의 단위 / 견적의 단위 (0)	김대호	2018-11-22	0	114	
818	[기사필기] 벡터공식 / 벡터방정식 / 벡터연산 (2)	김대호	2018-11-22	0	116	
817	[기사실기] 보호방식에 따른 전동기의 분류와 위험장소 (0)	김대호	2018-11-21	0	81	
816	[기사실기] 교호배치 / 동심배치 / 변압기 권선의 배치 (0)	김대호	2018-11-20	0	55	
815	[기사실기] 누설자속, 漏洩磁束, leakage flux / 누설임피던스 (0)	김대호	2018-11-19	0	71	
814	[기사실기] MSR (motor starting reactor: 모터 기동용 리액터) (0)	김대호	2018-11-18	0	77	

👍 추천   🖥 수정 ✖ 삭제 ✏ 답변 ☰ 목록보기