

Bilinmesi gerekli bir takım integraller $\left(\int f(x)dx = F(x) + c \right)$

$$1. \int \frac{1}{x^2 - a^2} dx = \frac{1}{2a} \ln \left| \frac{x-a}{x+a} \right|$$

$$2. \int \frac{1}{x^2 + a^2} dx = \frac{1}{a} \arctan \frac{x}{a}$$

$$3. \int \frac{1}{\sqrt{a^2 - x^2}} dx = \arcsin \frac{x}{a}$$

$$4. \int \frac{1}{\sqrt{x^2 + a^2}} dx = \ln(x + \sqrt{x^2 + a^2})$$

$$5. \int \frac{1}{\sqrt{x^2 - a^2}} dx = \ln(x + \sqrt{x^2 - a^2})$$

$$6. \int \ln(ax) dx = x \ln(ax) - x$$

$$7. \int \ln^2(ax) dx = x \ln^2(ax) - 2x \ln(ax) + 2x$$

$$8. \int x^n \ln(ax) dx = x^{n+1} \left[\frac{\ln(ax)}{n+1} - \frac{1}{(n+1)^2} \right] \quad (n > 0)$$

$$\int x \ln(ax) dx = \frac{x^2}{2} \ln(ax) - \frac{x^2}{4}$$

$$\int x^2 \ln(ax) dx = \frac{x^3}{3} \ln(ax) - \frac{x^3}{9}$$

$$9. \int \frac{\ln(ax)}{x} dx = \frac{1}{2} \ln^2(ax)$$

$$10. \int \frac{\ln(ax)}{x^2} dx = -\frac{1}{x} [1 + \ln(ax)]$$

$$11. \int \frac{\ln(ax)}{x^3} dx = -\frac{1}{2x^2} \left[\frac{1}{2} + \ln(ax) \right]$$

$$12. \int \frac{\ln^n(ax)}{x} dx = \frac{\ln^{n+1}(ax)}{n+1}$$

$$13. \int \frac{1}{x \ln(ax)} dx = \ln(\ln(ax))$$

$$14. \int \frac{1}{x \ln^m(ax)} dx = -\frac{1}{(m-1) \ln^{m-1}(ax)} \quad (m > 1)$$

$$15. \int e^{ax} dx = \frac{1}{a} e^{ax}$$

$$16. \int x e^{ax} dx = e^{ax} \left(\frac{x}{a} - \frac{1}{a^2} \right)$$

$$17. \int x^2 e^{ax} dx = e^{ax} \left(\frac{x^2}{a} - \frac{2x}{a^2} + \frac{2}{a^3} \right)$$

$$18. \int \frac{1}{1+e^x} dx = \ln \left(\frac{e^x}{1+e^x} \right)$$

$$19. \int \frac{e^{mx}}{a + b e^{mx}} dx = \frac{1}{mb} \ln(a + b e^{mx})$$

$$20. \int \frac{xe^x}{(1+x)^2} dx = \frac{e^x}{1+x}$$

$$21. \int e^{ax} \sin bx \, dx = \frac{e^{ax}}{a^2 + b^2} (a \sin bx - b \cos bx)$$

$$22. \int e^{ax} \cos bx \, dx = \frac{e^{ax}}{a^2 + b^2} (a \cos bx + b \sin bx)$$

$$23. \int \tan x \, dx = -\ell n |\cos x|$$

$$\int \cot x \, dx = \ell n |\sin x|$$

$$24. \int \tan^2 x \, dx = (\tan x) - x$$

$$\int \cot^2 x \, dx = -(\cot x) - x$$

$$25. \int \tan^3 x \, dx = \frac{1}{2} \tan^2 x + \ell n |\cos x|$$

$$\int \cot^3 x \, dx = -\frac{1}{2} \cot^2 x - \ell n |\sin x|$$

$$26. \int \sin x \cos x \, dx = \frac{1}{2} \sin^2 x$$

$$\int \sin x \cos^2 x \, dx = -\frac{1}{4} \left[\frac{1}{3} \cos 3x + \cos x \right] = -\frac{1}{3} \cos^3 x$$

$$\int \sin^2 x \cos x \, dx = -\frac{1}{4} \left[\frac{1}{3} \sin 3x - \sin x \right] = \frac{1}{3} \sin^3 x$$

$$27. \int \frac{1}{\sin x} \, dx = \ell n \left| \tan \frac{x}{2} \right| = \ell n \left| \frac{1}{\sin x} - \cot x \right|$$

$$\int \frac{1}{\cos x} \, dx = \ell n \left| \tan \left(\frac{\pi}{4} + \frac{x}{2} \right) \right| = \ell n \left| \frac{1}{\cos x} + \tan x \right|$$

$$28. \int \frac{1}{\sin^2 x} \, dx = -\cot x$$

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

$$29. \int \frac{\sin x}{\cos^n x} \, dx = \frac{1}{(n-1) \cos^{n-1} x}$$

$$\int \frac{\sin x}{\cos^2 x} \, dx = \frac{1}{\cos x}, \quad \int \frac{\sin x}{\cos^3 x} \, dx = \frac{1}{2 \cos^2 x}$$

$$30. \int \frac{\sin^2 x}{\cos^4 x} \, dx = \frac{1}{3} \tan^3 x$$

$$31. \int \frac{\cos x}{\sin^n x} \, dx = -\frac{1}{(n-1) \sin^{n-1} x}$$

$$\int \frac{\cos x}{\sin^2 x} \, dx = -\frac{1}{\sin x}, \quad \int \frac{\cos x}{\sin^3 x} \, dx = -\frac{1}{2 \sin^2 x}$$

$$32. \int x \sin x \, dx = (\sin x) - x \cos x$$

$$\int x \cos x \, dx = \cos x + x \sin x$$