

DEĞİŞKEN DEĞİŞTİRME

Aşağıdaki integralleri hesaplayınız.

$$1) \int 2(x^3 + 2x)(3x^2 + 2) dx$$

$$\text{Cevap: } (x^3 + 2x)^2 + c$$

$$2) \int \frac{(3x^2 - 8x + 3)}{(x^3 - 4x^2 + 3x + 1)} dx$$

$$\text{Cevap: } \ln|x^3 - 4x^2 + 3x + 1| + c$$

$$3) \int \frac{x^2 \cdot dx}{\sqrt{x^3 + 1}}$$

$$\text{Cevap: } \frac{2}{3} \sqrt{x^3 + 1} + c$$

$$4) \int \frac{(\sqrt{x} - 3)^5}{\sqrt{x}} \cdot dx$$

$$\text{Cevap: } \frac{(\sqrt{x} - 3)^6}{3} + c$$

$$5) \int \frac{\ln^3 x}{x} \cdot dx$$

$$\text{Cevap: } \frac{\ln^4 x}{4} + c$$

$$6) \int \frac{dx}{x \cdot \ln x}$$

$$\text{Cevap: } \ln|\ln x| + c$$

$$7) \int \frac{3x^2 \cdot dx}{(x^3 + 1) \cdot \ln(x^3 + 1)}$$

$$\text{Cevap: } \ln|\ln(x^3 + 1)| + c$$

$$8) \int \frac{dx}{\sqrt{x} \cdot (\sqrt{x} + 1)^3}$$

$$\text{Cevap: } -\frac{1}{(\sqrt{x} + 1)^2} + c$$

$$9) \int \frac{1}{x^2} \cdot dx$$

$$\text{Cevap: } -\frac{1}{x} + c$$

$$10) \int \frac{e^{\ln x}}{x} dx$$

$$\text{Cevap: } x + c$$

$$11) \int \frac{e^x + e^{-x}}{e^x - e^{-x}} \cdot dx$$

$$\text{Cevap: } \ln|e^x - e^{-x}| + c$$

$$12) \int \frac{e^{\sqrt{x}}}{2\sqrt{x}} dx$$

$$\text{Cevap: } e^{\sqrt{x}} + c$$

$$13) \int \frac{\sqrt{2 + \ln x}}{x} dx$$

$$\text{Cevap: } \frac{2}{3} (2 + \ln x)^{\frac{3}{2}} + c$$

$$14) \int \frac{\sqrt{x+2} + 1}{\sqrt[3]{x+2}} \cdot dx$$

$$\text{Cevap: } \frac{6}{7} (x+2)^{\frac{7}{6}} + \frac{3}{2} (x+2)^{\frac{2}{3}} + c$$

$$15) \int \frac{\sqrt{2x-1} + 3}{\sqrt[5]{2x-1}} \cdot dx$$

$$\text{Cevap: } \frac{5}{13} (2x-1)^{\frac{13}{10}} + \frac{15}{4} (2x-1)^{\frac{4}{5}} + c$$

$$16) \int e^{\sin x} \cdot \cos x dx$$

$$\text{Cevap: } e^{\sin x} + c$$

$$17) \int \frac{\sin(\ln x)}{x} dx$$

$$\text{Cevap: } -\cos|\ln x| + c$$

$$18) \int \frac{\cos x dx}{2 + 4 \sin x}$$

$$\text{Cevap: } \frac{1}{4} \ln|2 + 4 \sin x| + c$$

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19) $\int \frac{\sin x}{\cos^3 x} dx$

Cevap: $\frac{1}{2} \sec^2 x + c$

20) $\int \sin x \cdot \cos x dx$

Cevap: $\frac{\sin^2 x}{2} + c$

21) $\int \cos^2 x \cdot \sin x dx$

Cevap: $\frac{-\cos^3 x}{3} + c$

22) $\int \cos^4 x \cdot \sin x dx$

Cevap: $\frac{-\cos^5 x}{5} + c$

23) $\int \sin(2x+3) dx$

Cevap: $-\frac{1}{2} \cos(2x+3) + c$

24) $\int \cos(5x-4) dx$

Cevap: $\frac{1}{5} \sin(5x-4) + c$

25) $\int \sin(x^2+2) 2x dx$

Cevap: $-\cos(x^2+2) + c$

26) $\int \tan x dx$

Cevap: $-\ln|\cos x| + c$

27) $\int \tan x \cdot \frac{1}{\cos^2 x} dx$

Cevap: $\frac{\tan^2 x}{2} + c$

28) $\int e^x \cdot \csc e^x dx$

Cevap: $\operatorname{sine}^x + c$

29) $\int \sin^3 x \cdot \cos x \cdot dx$

Cevap: $\frac{\sin^4 x}{4} + c$

30) $\int \frac{\tan x}{\cos^2 x} \cdot dx$

Cevap: $\frac{\tan^2 x}{2} + c$

31) $\int \tan x \cdot (1 + \tan^2 x) \cdot dx$

Cevap: $\frac{\tan^2 x}{2} + c$

32) $\int \frac{\sin \sqrt{x} \cdot \cos \sqrt{x}}{\sqrt{x}} \cdot dx$

Cevap: $\frac{\sin^2 \sqrt{x}}{2} + c$

33) $\int \cos^5 x \cdot \sin x \cdot dx$

Cevap: $\frac{-\cos^6 x}{6} + c$

34) $\int \frac{\cos x}{3+2 \cdot \sin x} \cdot dx$

Cevap: $\frac{1}{2} \ln|3+2 \sin x| + c$

35) $\int x \cdot \cos(2x^2) \cdot dx$

Cevap: $\frac{1}{4} \sin(2x^2) + c$

36) $\int \sin^3 x \cdot \cos^3 x \cdot dx$

Cevap: $\frac{\sin^4 x}{4} - \frac{\sin^6 x}{6} + c$

37) $\int \frac{\sin 2x}{1+\sin^2 x} \cdot dx$

Cevap: $\ln|1+\sin^2 x| + c$

38) $\int \tan x \cdot \ln(\cos x) \cdot dx$

Cevap: $-\frac{(\ln(\cos x))^2}{2} + c$

39) $\int \cot x \cdot \ln(\sin x) \cdot dx$

Cevap: $\frac{(\ln(\sin x))^2}{2} + c$

40) $\int \sin^3 x \cdot dx$

Cevap: $\frac{\cos^3 x}{3} - \cos x + c$

41) $\int \frac{\arcsin x}{\sqrt{1-x^2}} dx$

Cevap: $\frac{(\arcsin x)^2}{2} + c$

42) $\int \frac{\arctan x}{1+x^2} dx$

Cevap: $\frac{(\arctan x)^2}{2} + c$

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