INTEGRÁLSZÁMÍTÁS

1. $\int (\cos x + 6x^2 + 1)\, dx$ $\qquad \left[\sin x + 6 \cdot \dfrac{x^3}{3} + x + c = \sin x + 2x^3 + x + c \right]$

2. $\int \left(\dfrac{1}{\sin^2 x} - 4x^7 + \dfrac{1}{x} \right) dx$ $\qquad \left[-\text{ctg}x - 4 \cdot \dfrac{x^8}{8} + \ln|x| + c = -\text{ctg}x - \dfrac{1}{2}x^8 + \ln|x| + c \right]$

3. B $\quad \int \left(\dfrac{2}{1+x^2} + 5^x + 3 - \dfrac{\sqrt{3}}{x^4} \right) dx$

   $\left[2 \cdot \text{arctg}x + \dfrac{5^x}{\ln 5} + 3x - \sqrt{3} \cdot \dfrac{x^{-3}}{-3} + c = 2\text{arctg}x + \dfrac{5^x}{\ln 5} + 3x + \dfrac{\sqrt{3}}{3x^3} + c \right]$

4. B $\quad \int \left(\dfrac{4}{\sqrt{1-x^2}} - 7\text{e}^x + 3x^2 - \dfrac{4\sqrt{x}}{x^2} \right) dx$

   $\left[4 \cdot \arcsin x - 7 \cdot \text{e}^x + 3 \cdot \dfrac{x^3}{3} - 4 \cdot \dfrac{x^{-\frac{1}{2}}}{-\frac{1}{2}} + c = 4\arcsin x - 7\text{e}^x + x^3 + \dfrac{8}{\sqrt{x}} + c \right]$

5. B $\quad \int \dfrac{x^3 + \sqrt[4]{x} - x}{\sqrt[3]{x}}\, dx$

   $\left[\dfrac{x^{\frac{11}{3}}}{\frac{11}{3}} + \dfrac{x^{\frac{11}{12}}}{\frac{11}{12}} - \dfrac{x^{\frac{5}{3}}}{\frac{5}{3}} + c = \dfrac{3}{11}\sqrt[3]{x^{11}} + \dfrac{12}{11}\sqrt[12]{x^{11}} - \dfrac{3}{5}\sqrt[3]{x^5} + c \right]$

6. B $\quad \int \left(\dfrac{5}{\cos^2 x} - 8 + 3x^6 + \dfrac{3x}{x^8} \right) dx$

   $\left[5 \cdot \text{tg}x - 8x + 3\dfrac{x^7}{7} + 3 \cdot \dfrac{x^{-6}}{-6} + c = 5\text{tg}x - 8x + \dfrac{3}{7}x^7 - \dfrac{1}{2} \cdot \dfrac{1}{x^6} + c \right]$

7. B,V $\quad \int \sqrt[4]{4x-2}\, dx$ $\qquad \left[\dfrac{1}{4} \cdot \dfrac{(4x-2)^{\frac{5}{4}}}{\frac{5}{4}} + c = \dfrac{1}{5} \cdot (4x-2)^{\frac{5}{4}} + c \right]$

8. B,V $\quad \int 5^{6-4x}\, dx$ $\qquad \left[-\dfrac{1}{4} \cdot \dfrac{5^{6-4x}}{\ln 5} + c \right]$

9. B,V $\quad \int x^3 \cdot (3x^4+5)^8\, dx$ $\qquad \left[\dfrac{1}{12} \cdot \dfrac{(3x^4+5)^9}{9} + c = \dfrac{1}{108} \cdot (3x^4+5)^9 + c \right]$

10. B,V $\quad \int x^3 \cdot \sqrt[4]{(x^4-7)^5}\, dx$ $\qquad \left[\dfrac{1}{4} \cdot \dfrac{(x^4-7)^{\frac{9}{4}}}{\frac{9}{4}} + c = \dfrac{1}{9} \cdot (x^4-7)^{\frac{9}{4}} + c \right]$

11. B,V $\quad \int \sin x \cdot \cos^4 x\, dx$ $\qquad \left[-\dfrac{\cos^5 x}{5} + c \right]$

12. B,V $\displaystyle\int x \cdot \sqrt[5]{2 - 7x^2}\, dx$ $\displaystyle\left[-\frac{1}{14} \cdot \frac{(2 - 7x^2)^{\frac{6}{5}}}{\frac{6}{5}} + c = -\frac{5}{84} \cdot (2 - 7x^2)^{\frac{6}{5}} + c\right]$

13. B,V $\displaystyle\int (e^{4x} + 4)^7 \cdot e^{4x}\, dx$ $\displaystyle\left[\frac{1}{4} \cdot \frac{(e^{4x} + 4)^8}{8} + c = \frac{1}{32} \cdot (e^{4x} + 4)^8 + c\right]$

14. B,V $\displaystyle\int 2\cos x \cdot \sin^7 x\, dx$ $\displaystyle\left[2 \cdot \frac{(\sin x)^8}{8} + c = \frac{1}{4} \cdot \sin^8 x + c\right]$

15. B,V $\displaystyle\int (4 - 6x^2)e^{-x^3 + 2x}\, dx$ $\displaystyle[2 \cdot e^{-x^3 + 2x} + c]$

$\displaystyle\left(\int (4 - 6x^2)e^{-x^3 + 2x}\, dx = 2\int (2 - 3x^2)e^{-x^3 + 2x}\, dx\right)$

16. B,V $\displaystyle\int \sqrt[3]{(3 - 2x)^2}\, dx$ $\displaystyle\left[-\frac{1}{2} \cdot \frac{(3 - 2x)^{\frac{5}{3}}}{\frac{5}{3}} + c = -\frac{1}{2} \cdot \frac{3}{5} \sqrt[3]{(3 - 2x)^5} + c\right]$

$\displaystyle\left(\int \sqrt[3]{(3 - 2x)^2}\, dx = \int (3 - 2x)^{\frac{2}{3}}\, dx = -\frac{1}{2}\int -2 \cdot (3 - 2x)^{\frac{2}{3}}\, dx\right)$

17. B,V $\displaystyle\int e^{2 + \sin x} \cdot \cos x\, dx$ $\displaystyle\left[e^{2 + \sin x} + c\right]$

18. B,V $\displaystyle\int \frac{e^{3x}}{e^{3x} - 5}\, dx$ $\displaystyle\left[\frac{1}{3} \cdot \ln |e^{3x} - 5| + c\right]$

19. B,V $\displaystyle\int \frac{x}{3x^2 + 2}\, dx$ $\displaystyle\left[\frac{1}{6} \cdot \ln |3x^2 + 2| + c = \frac{1}{6} \cdot \ln(3x^2 + 2) + c\right]$

20. B,V $\displaystyle\int \frac{3\sin x}{2 + 7\cos x}\, dx$ $\displaystyle\left[3 \cdot \left(-\frac{1}{7}\right) \cdot \ln |2 + 7\cos x| + c = -\frac{3}{7} \cdot \ln |2 + 7\cos x| + c\right]$

21. B,V $\displaystyle\int \frac{8\sin(5x)}{2 + 3\cos(5x)}\, dx$ $\displaystyle\left[8 \cdot \left(-\frac{1}{15}\right) \cdot \ln |2 + 3\cos(5x)| + c = -\frac{8}{15} \cdot \ln |2 + 3\cos(5x)| + c\right]$

22. B,V $\displaystyle\int \frac{2e^{-x}}{3 + 5e^{-x}}\, dx$ $\displaystyle\left[2 \cdot \left(-\frac{1}{5}\right) \cdot \ln |3 + 5e^{-x}| + c = -\frac{2}{5} \cdot \ln |3 + 5e^{-x}| + c\right]$

23. B,V $\displaystyle\int \frac{\ln^3 x}{x}\, dx$ $\displaystyle\left[\frac{(\ln x)^4}{4} + c = \frac{1}{4} \cdot \ln^4 x + c\right]$

24. B,V $\displaystyle\int \frac{3}{\cos^2(3 - 4x)}\, dx$ $\displaystyle\left[3 \cdot \left(-\frac{1}{4}\right) \cdot \operatorname{tg}(3 - 4x) + c = -\frac{3}{4} \cdot \operatorname{tg}(3 - 4x) + c\right]$

25. B,V $\displaystyle\int \frac{5x^4}{\sin^2(1 + 2x^5)}\, dx$ $\displaystyle\left[5 \cdot \frac{1}{10} \cdot \left(-\operatorname{ctg}(1 + 2x^5)\right) + c = -\frac{1}{2} \cdot \operatorname{ctg}(1 + 2x^5) + c\right]$

26. B,V $\displaystyle\int \frac{x^2}{\sin^2(2x^3 + 7)}\, dx$ $\displaystyle\left[\frac{1}{6} \cdot \left(-\operatorname{ctg}(2x^3 + 7)\right) + c\right]$

27. B,V $\quad \int \dfrac{x^2}{\sqrt[7]{2x^3-2}}\,dx$
$$\left[\frac{1}{6}\cdot\frac{(2x^3-2)^{\frac{6}{7}}}{\frac{6}{7}}+c=\frac{7}{36}\cdot(2x^3-2)^{\frac{6}{7}}+c\right]$$

28. B,V $\quad \int \dfrac{5x^3}{\sqrt[3]{(2x^4-4)^2}}\,dx$
$$\left[5\cdot\frac{1}{8}\cdot\frac{(2x^4-4)^{\frac{1}{3}}}{\frac{1}{3}}+c=\frac{15}{8}\cdot(2x^4-4)^{\frac{1}{3}}+c\right]$$

29. B,V $\quad \int \dfrac{\sin x}{\cos^4 x}\,dx$
$$\left[-\frac{(\cos x)^{-3}}{-3}+c=\frac{1}{3}\cdot\frac{1}{\cos^3 x}+c\right]$$

30. B,V $\quad \int \dfrac{3x^3}{\sqrt[9]{-1-5x^4}}\,dx$
$$\left[3\cdot\left(-\frac{1}{20}\right)\cdot\frac{(-1-5x^4)^{\frac{8}{9}}}{\frac{8}{9}}+c=-\frac{27}{160}\cdot(-1-5x^4)^{\frac{8}{9}}+c\right]$$