HATÁROZOTT INTEGRÁL

1. $\int_{-1}^{3}(4x-5)\,dx$ $\left[-4; \int(4x-5)\,dx = 4\cdot\frac{x^2}{2}-5x+c\right]$

2. $\int_{0}^{\frac{\pi}{2}}\cos x\,dx$ $[1]$

3. $\int_{-6}^{-2}\frac{5}{x-3}\,dx$ $\left[5\cdot\ln 5-5\cdot\ln 9=5\cdot\ln\left(\frac{5}{9}\right); \int\frac{5}{x-3}\,dx=5\cdot\ln|x-3|+c\right]$

4. $\int_{0}^{5}\mathrm{e}^{-4x}\,dx$ $\left[-\frac{1}{4}\cdot\mathrm{e}^{-20}+\frac{1}{4}; \int\mathrm{e}^{-4x}\,dx=-\frac{1}{4}\cdot\mathrm{e}^{-4x}+c\right]$

5. $\int_{-10}^{-1}\frac{7x^3-2x-15}{x^2}\,dx$
$\left[-355,39; \int\frac{7x^3-2x-15}{x^2}\,dx=\int\left(7x-2\cdot\frac{1}{x}-15x^{-2}\right)\,dx=\frac{7}{2}x^2-2\cdot\ln|x|+15\cdot\frac{1}{x}+c\right]$

6. $\int_{1}^{16}\left(3x^2+\sqrt{x}\right)\left(5x-2\sqrt[3]{x^2}\right)\,dx$
$[204871; \int\left(3x^2+\sqrt{x}\right)\left(5x-2\sqrt[3]{x^2}\right)\,dx=\int\left(15x^3-6x^{\frac{8}{3}}+5x^{\frac{3}{2}}-2x^{\frac{7}{6}}\right)\,dx=$
$\frac{15}{4}x^4-\frac{18}{11}x^{\frac{3}{11}}+2x^{\frac{5}{2}}-\frac{12}{13}x^{\frac{13}{6}}+c]$

7. $\int_{1}^{10}\frac{x^2\sqrt[4]{x\sqrt[5]{x}}}{\sqrt{x}}\,dx$ $\left[224,98; \int\frac{x^2\sqrt[4]{x\sqrt[5]{x}}}{\sqrt{x}}\,dx=\int x^{\frac{9}{5}}\,dx=\frac{5}{14}x^{\frac{14}{5}}+c\right]$

8. $\int_{2}^{8}\frac{x^4-2}{10x-x^5}\,dx$
$\left[-\frac{1}{5}(\ln 32688-\ln 12)=-1,582; \int\frac{x^4-2}{10x-x^5}\,dx=-\frac{1}{5}\int\frac{-5(x^4-2)}{10x-x^5}\,dx=-\frac{1}{5}\cdot\ln|10x-x^5|+c\right]$

9. $\int_{0}^{1}\frac{(4x+13)^5}{9}\,dx$
$\left[89402; \int\frac{(4x+13)^5}{9}\,dx=\frac{1}{9}\cdot\frac{1}{4}\cdot\frac{(4x+13)^6}{6}+c=\frac{1}{216}\cdot(4x+13)^6+c\right]$

10. $\int_{0}^{\pi}\cos\left(\frac{2x}{5}\right)\,dx$ $\left[\frac{5}{2}\sin\left(\frac{2}{5}\cdot\pi\right)=(radian)2,3776; \int\cos\left(\frac{2}{5}x\right)\,dx=\frac{5}{2}\sin\left(\frac{2}{5}x\right)+c\right]$

11. $\int_{0}^{\frac{\pi}{20}}\frac{\sin(5x)}{\cos(5x)}\,dx$ $\left[(radian)0,06932; \int\frac{\sin(5x)}{\cos(5x)}\,dx=-\frac{1}{5}\cdot\ln|\cos(5x)|+c\right]$

12. $\int_{-2}^{0}\frac{12}{(x+3)^5}\,dx$ $\left[\frac{80}{27}=2,963; \int\frac{12}{(x+3)^5}\,dx=\int 12(x+3)^{-5}\,dx=-3\cdot\frac{1}{(x+3)^4}+c\right]$

13. $\int_{-3}^{3}\frac{6x}{\sqrt{x^2+8}}\,dx$ $\left[0; \int\frac{6x}{\sqrt{x^2+8}}\,dx=\int 6x\cdot(x^2+8)^{-\frac{1}{2}}\,dx=6\cdot\sqrt{x^2+8}+c\right]$

14. $\displaystyle\int_1^{e^3} \frac{\ln^5 x}{x}\,dx$ $\left[121,5; \int \frac{\ln^5 x}{x}\,dx = \int \frac{1}{x}\cdot(\ln x)^5\,dx = \frac{1}{6}\cdot(\ln x)^6 + c\right]$

15. $\displaystyle\int_0^{\ln 12} (3+2e^x)^2\,dx$
$\left[9\ln 12 + 418 = 440,36; \int (3+2e^x)^2\,dx = \int (9+12e^x+4e^{2x})\,dx = 9x + 12e^x + 2e^{2x} + c\right]$

16. $\displaystyle\int_1^5 \frac{x^2 - e^{-3x}}{x^3 + e^{-3x}}\,dx$ $\left[1,5932; \int \frac{x^2-e^{-3x}}{x^3+e^{-3x}}\,dx = \frac{1}{3}\int \frac{3(x^2-e^{-3x})}{x^3+e^{-3x}}\,dx = \frac{1}{3}\cdot\ln|x^3+e^{-3x}| + c\right]$

17. $\displaystyle\int_{-2}^1 \frac{36x}{3x^2-15}\,dx$ $\left[6\ln 12 - 6\ln 3 = 6\ln 4 = 8,3178; \int \frac{36x}{3x^2-15}\,dx = 6\cdot\ln|3x^2-15| + c\right]$

18. $\displaystyle\int_0^2 \frac{15}{8x+13}\,dx$ $\left[\frac{15}{8}\cdot\ln\left(\frac{29}{13}\right) = 1,5044; \int \frac{15}{8x+13}\,dx = \frac{15}{8}\cdot\ln|8x+13| + c\right]$

19. $\displaystyle\int_{-7}^0 \frac{10}{\sqrt{4-3x}}\,dx$ $\left[20; \int \frac{10}{\sqrt{4-3x}}\,dx = \int 10\cdot(4-3x)^{-\frac{1}{2}}\,dx = -\frac{20}{3}\cdot(4-3x)^{\frac{1}{2}} + c\right]$

20. $\displaystyle\int_{-1}^0 x^2\cdot\sqrt[4]{1+x^3}\,dx$ $\left[\frac{4}{15}; \int x^2\cdot\sqrt[4]{1+x^3} = \frac{4}{15}\cdot(1+x^3)^{\frac{5}{4}} + c\right]$