

XAMAT, YAMAT

Cvičení 6

Neurčité integrály

Metodou přímé integrace nebo per partes vypočtěte dané neurčité integrály

1. $\int \left(\frac{1-2x}{x}\right)^2 dx$ $\left\{-\frac{1}{x} - 4 \ln|x| + 4x + c\right\}$
2. $\int (\sqrt{x} + 1)(x - \sqrt{x} + 1) dx$ $\left\{\frac{2}{5}x^2\sqrt{x} + x + c\right\}$
3. $\int \frac{x^4 + x^3 - x^2 + x + 4}{x^2 + 1} dx$ $\left\{\frac{x^3}{3} + \frac{x^2}{2} - 2x + 6 \operatorname{arctg} x + c\right\}$
4. $\int \frac{3 \cdot 2^x - 2 \cdot 3^x}{2^x} dx$ $\left\{3x - 2 \frac{\left(\frac{3}{2}\right)^x}{\ln \frac{3}{2}} + c\right\}$
5. $\int \frac{1+2x^2}{x^2(1+x^2)} dx$ $\left\{-\frac{1}{x} + \operatorname{arctg} x + c\right\}$
6. $\int \frac{\cos 2x}{\cos^2 x} dx$ $\{2x - \operatorname{tg} x + c\}$
7. $\int \ln x \, dx$ $\{x(\ln x - 1) + c\}$
8. $\int x^7 \cdot \ln x \, dx$ $\left\{\frac{x^8}{8} \left(\ln x - \frac{1}{8}\right) + c\right\}$
9. $\int \frac{\ln x}{\sqrt[3]{x}} dx$ $\left\{\frac{3}{2} \sqrt[3]{x^2} \left(\ln x - \frac{3}{2}\right) + c\right\}$
10. $\int (3x + 5) \cdot e^x dx$ $\{e^x(3x + 2) + c\}$
11. $\int (7 - x) \cdot \sin x \, dx$ $\{(x - 7) \cos x - \sin x + c\}$
12. $\int e^x \cdot \cos x \, dx$ $\left\{\frac{1}{2} e^x (\cos x + \sin x) + c\right\}$
13. $\int x \cdot \operatorname{arctg} x \, dx$ $\left\{\frac{x^2+1}{2} \operatorname{arctg} x - \frac{1}{2}x + c\right\}$
14. $\int (3x - 1) \cdot 5^x dx$ $\left\{\frac{5^x}{\ln 5} \left(3x - 1 - \frac{3}{\ln 5}\right) + c\right\}$

Metodou substituce vypočtěte dané neurčité integrály

1. $\int \cos(5x - 4) \, dx$ $\left\{\frac{1}{5} \sin(5x - 4) + c\right\}$
2. $\int 6x \cdot e^{x^2} \, dx$ $\{3e^{x^2} + c\}$
3. $\int 2 \sin^3 x \cdot \cos x \, dx$ $\left\{\frac{1}{2} \sin^4 x + c\right\}$
4. $\int \frac{e^{\operatorname{arctg} x}}{4+4x^2} \, dx$ $\left\{\frac{1}{4} e^{\operatorname{arctg} x} + c\right\}$
5. $\int \frac{3 \ln^8 x}{4x} \, dx$ $\left\{\frac{1}{12} \ln^9 x + c\right\}$
6. $\int \frac{2 \arcsin x}{\sqrt{9-9x^2}} \, dx$ $\left\{\frac{1}{3} \arcsin^2 x + c\right\}$

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| 7. $\int \sin \frac{3x-1}{4} dx$ | $\left\{-\frac{4}{3} \cos \frac{3x-1}{4} + c\right\}$ |
| 8. $\int \frac{x}{x^2-9} dx$ | $\left\{\frac{1}{2} \ln x^2-9 + c\right\}$ |
| 9. $\int \frac{5}{x \cdot \ln^6 x} dx$ | $\left\{-\frac{1}{\ln^5 x} + c\right\}$ |
| 10. $\int 5x \cdot \sqrt{3-x^2} dx$ | $\left\{-\frac{5}{3} \sqrt{(3-x^2)^3} + c\right\}$ |
| 11. $\int x \cdot (x^2+7)^{\frac{1}{2}} dx$ | $\left\{\frac{1}{3} (x^2+7)^{\frac{3}{2}} + c\right\}$ |
| 12. $\int \cotg x dx$ | $\{\ln \sin x + c\}$ |
| 13. $\int x^2 \cdot \cos(2x^3+5) dx$ | $\left\{\frac{1}{6} \sin(2x^3+5) + c\right\}$ |
| 14. $\int \frac{e^{\operatorname{tg} x}}{\cos^2 x} dx$ | $\{e^{\operatorname{tg} x} + c\}$ |