Nalezněte primitivní funkce:

1. $\dfrac{1}{3x^2-2x-1}$ 2. $\dfrac{x}{x^4-2x^2-1}$ 3. $\dfrac{x+1}{x^2+x+1}$

4. $\dfrac{x^5}{x^2+x-2}$ 5. $\dfrac{dx}{x^4+1}$ 6. $\dfrac{x}{x^8-1}$

7. $\dfrac{x^3}{x^8+3}$ $*$ 8. $\dfrac{x^3}{(x-1)^{100}}$ $*$ 9. $\dfrac{1}{x^5+x^4-2x^3-2x^2+x+1}$

10. $\dfrac{1}{\sqrt{(x-a)(b-x)}}$ 11. $\dfrac{\sqrt{x+1}-\sqrt{x-1}}{\sqrt{x+1}+\sqrt{x-1}}$ 12. $\sqrt[4]{\dfrac{x-4}{x+4}}$

13. $\dfrac{1-\sqrt{x+1}}{1+\sqrt[3]{x+1}}$ 14. $\dfrac{x}{\sqrt[4]{x^3(1-x)}}$ 15. $\dfrac{x}{(1+x)(1-x^3)\sqrt{\frac{1-x}{1+x}}}$

16. $\dfrac{1}{x\sqrt{x^2+x+1}}$ 17. $\dfrac{x}{\sqrt{x^2+x+1}}$ 18. $\dfrac{x^2+1}{x\sqrt{x^4+1}}$

$*$19. $\dfrac{1}{(x^2+2)\sqrt{2x^2-2x+5}}$ $*$ 20. $\dfrac{x^3}{(1+x)\sqrt{1+2x-x^2}}$

21. $\dfrac{1}{(x^2+1)\sqrt{x^2-1}}$ $*$ 22. $\dfrac{\sqrt{x^2+x+1}}{x^2+2x+1}$ $*$ 23. $\dfrac{1}{(x+1)^5\sqrt{x^2+2x}}$

24. $x^2 \sin^2 x$ 25. $\dfrac{x}{\cos x}$ 26. $2 \operatorname{arctg} \dfrac{x}{2}$

27. $\arcsin x$ 28. $\dfrac{\arccos x}{x^2}$ 29. $\ln\left(\sqrt{x+1} - \sqrt{x-1}\right)$

30. $\dfrac{\ln \operatorname{arctg} x}{1+x^2}$ 31. $\dfrac{\operatorname{tg}(1/x)}{x^2}$ 32. $\dfrac{1}{\cos^3 x}$

33. $\dfrac{x^2}{(8x^3+27)^{2/3}}$ 34. $\dfrac{\sin x + \cos x}{\sqrt[3]{\sin x - \cos x}}$ 35. $\dfrac{1}{\sqrt{\mathrm{e}^x - 1}}$

36. $\dfrac{1}{2+\sin x}$ 37. $\dfrac{1}{(2+\cos x)\sin x}$ 38. $\dfrac{\sin x \cos x}{\sin x + \cos x}$

39. $\dfrac{\cos x}{2\sin x - 3\cos x + 6}$ 40. $\dfrac{1}{\sin x}$ 41. $\dfrac{\sin^2 x}{1+\sin^2 x}$

42. $\operatorname{tg}^5 x$ 43. $\dfrac{1-\operatorname{tg} x}{1+\operatorname{tg} x}$ 44. $\dfrac{1+\operatorname{tg}^2 x}{2+\operatorname{tg} x}$

Nalezněte rekurentní vzorce pro I_n, kde $I_n =$

45. $\int x^n \mathrm{e}^x$ 46. $\int \sin^n x$ 47. $\int \dfrac{1}{\sin^n x}$ 48. $\int \dfrac{1}{(x^2+1)^n}$

Nápověda: 10–15, 20 substituce $t = \sqrt[k]{\frac{ax+b}{cx+d}}$; 16, 17, 18, 19, 21, 22, 23 Eulerova substituce, 18, 21 hyperbolicke substituce, 24–29 per-partes, 30–35 1. věta o substituci, 36–40 substituce $t = \operatorname{tg}(x/2)$, 41–44 substituce $t = \operatorname{tg} x$, 45–48 per-partes.