

**I. Alapintegrálokra visszavezethető feladatok :**

1. $\int \frac{\sqrt[4]{x \cdot \sqrt[5]{x}}}{\sqrt[6]{x}} dx = ?$	2. $\int \frac{x^4 - 4x^3 + 2\sqrt[3]{x}}{\sqrt[5]{x^4}} dx = ?$	3. $\int \frac{-5}{2+2x^2} dx = ?$
4. $\int (5 \cdot 2^x + 4 \cdot \sin x - 3 \cdot \cos x) dx = ?$	5. $\int \operatorname{tg}^2 x dx = ?$	6. $\int \operatorname{ctg}^2 x dx = ?$
7. $\int \frac{\cos^2 x - 5}{1 + \cos 2x} dx = ?$	8. $\int \frac{5 \cdot \cos 2x}{\sin x + \cos x} dx = ?$	9. $\int \left( \frac{3}{\cos^2 x} - \frac{7}{5 \cdot \sin^2 x} \right) dx = ?$
10. $\int 5 \cdot \operatorname{th}^2 x dx = ?$	11. $\int \operatorname{cth}^2 x dx = ?$	12. $\int (x^{-2} + x^{-1} - 2 \cdot 3^{x-1}) dx = ?$
13. $\int \frac{1}{\operatorname{sh} x + \operatorname{ch} x} dx = ?$	14. $\int \frac{1}{4 \cdot \sqrt{5-5x^2}} dx = ?$	15. $\int \frac{1}{\sqrt{6+6x^2}} dx = ?$
16. $\int \frac{5}{4-4x^2} dx = ?$	17. $\int \frac{x^2}{x^2+1} dx = ?$	18. $\int \frac{3}{\sqrt{7x^2-7}} dx = ?$

**II. Integrálás helyettesítéssel :**

a.)  $f(a \cdot x + b)$  alakú integrandus  $\Rightarrow \int f(a \cdot x + b) dx = \frac{1}{a} \cdot F(a \cdot x + b) + c, \quad (F' = f)$

19. $\int \sqrt[4]{7x-16} dx = ?$	20. $\int e^{5x+4} dx = ?$	21. $\int \sin(4x+5) dx = ?$
22. $\int \operatorname{sh}(2-7x) dx = ?$	23. $\int (5 - \operatorname{th}^2(1-x)) dx = ?$	24. $\int \operatorname{tg}^2(2-3x) dx = ?$
25. $\int \frac{5}{\cos^2(4-6x)} dx = ?$	26. $\int \frac{7}{4x^2-4x+2} dx = ?$	27. $\int \frac{1}{1-x} dx = ?$
28. $\int \frac{1}{(1-x)^2} dx = ?$	29. $\int \frac{1}{\sqrt{4x^2+4x}} dx = ?$	30. $\int \frac{1}{\operatorname{sh}^2(1-x)} dx = ?$

b.) Ha  $\alpha \in \mathbb{R} \setminus \{1\}$ , akkor  $\int f^\alpha(x) \cdot f'(x) dx = \frac{f^{\alpha+1}(x)}{\alpha+1} + c$

31. $\int (3x^2 - \sin x) \cdot (x^3 + \cos x) dx = ?$	32. $\int x^2 \cdot (2x^3 + 4)^{99} dx = ?$	33. $\int 2\pi \cdot \sin^4 x \cdot \sin 2x dx = ?$
34. $\int \frac{\ln x}{x} dx = ?$	35. $\int \frac{\sqrt{\ln^3 x}}{x} dx = ?$	36. $\int \frac{x}{\sqrt{x^2+1}} dx = ?$
37. $\int (x^2+1) \cdot \sqrt[3]{x^3+3x+1} dx = ?$	38. $\int e^x \cdot (e^{2x} + e^{3x} - 1) dx = ?$	39. $\int 2^{x+1} \cdot \sqrt{2^x-1} dx = ?$
40. $\int \frac{\operatorname{arctg}^5 x}{1+x^2} dx = ?$	41. $\int \frac{1}{(1+x^2) \cdot \sqrt{\operatorname{arctg} x}} dx = ?$	42. $\int \frac{\sin x \cdot \sqrt[3]{\operatorname{tg}^2 x - 1}}{\cos^3 x} dx = ?$
43. $\int \frac{\arcsin \sqrt{x}}{\sqrt{(1-x) \cdot x}} dx = ?$	44. $\int \frac{\sin 2x}{(5 - \sin^2 x)^7} dx = ?$	45. $\int \frac{\sqrt[5]{\operatorname{ar} \operatorname{ch}^3 x}}{\sqrt{x^2-1}} dx = ?$
46. $\int e^x \cdot \sqrt{(e^x + 2003)^{27}} dx = ?$	47. $\int e^{2x} \cdot \sqrt{e^{2x} + 1} dx = ?$	48. $\int 2 \cdot e^{2 \cdot \sin x} \cdot \cos x dx = ?$

c.)  $\int \frac{f'(x)}{f(x)} dx = \ln |f(x)| + c$

49. $\int \frac{x}{1+x^2} dx = ?$	50. $\int \frac{x^3+2x}{x^4+4x^2+1} dx = ?$	51. $\int \frac{\sin 2x}{\sin^2 x + 2\pi} dx = ?$
52. $\int \frac{\operatorname{sh} 2x}{\operatorname{ch}^2 x + 2e} dx = ?$	53. $\int \frac{1}{\operatorname{ch}^2 x \cdot \operatorname{th} x} dx = ?$	54. $\int \frac{1}{(x^2-1) \cdot \operatorname{arth} x} dx = ?$
55. $\int \operatorname{tg} x dx = ?$	56. $\int \operatorname{ctg} x dx = ?$	57. $\int \frac{1}{\cos^2 x \cdot \operatorname{tg} x} dx = ?$
58. $\int \frac{1}{\sqrt{1-x^2} \cdot \arcsin x} dx = ?$	59. $\int \frac{e^{2x}}{e^{2x}+3} dx = ?$	60. $\int \frac{1}{x \cdot \ln x} dx = ?$
61. $\int \frac{1}{x \cdot (\ln x + 1)} dx = ?$	62. $\int \frac{100}{(x+1) \cdot \ln(x+1)} dx = ?$	63. $\int \frac{1}{(x^2+1) \cdot \operatorname{arctg} x} dx = ?$

d.) További feladatok (Integrálás helyettesítéssel) :

64. $\int 5^{2-3x} dx = ?$	65. $\int e^{\sin x} \cdot \cos x dx = ?$	66. $\int (3x^2+2) \cdot \sin(x^3+2x-4) dx = ?$
67. $\int \frac{1}{\sin^2(3x+2)} dx = ?$	68. $\int \frac{1}{5^2+x^2} dx = ?$	69. $\int \frac{1}{36+16x^2} dx = ?$
70. $\int \frac{1}{\sqrt{36-16x^2}} dx = ?$	71. $\int \frac{1}{\sqrt{16+25x^2}} dx = ?$	72. $\int \frac{1}{\sqrt{25x^2-16}} dx = ?$
73. $\int \frac{1}{49-25x^2} dx = ?$	74. $\int \frac{e^{2x}}{1+e^x} dx = ? \quad (t := e^x)$	75. $\int \sqrt{1-x^2} dx = ? \quad (x := \sin t)$
76. $\int \sqrt{1+x^2} dx = ? \quad (x := \operatorname{sh} t)$	77. $\int \sqrt{x^2-1} dx = ? \quad (x := \operatorname{ch} t)$	78. $\int \sqrt{25-16x^2} dx = ?$

### III. Parciális integrálás :

a.) Polinomfüggvénnyel szorzott exponenciális, trigonometrikus vagy hiperbolikus függvények integrálása :

79. $\int x \cdot e^{\pi \cdot x} dx = ?$	80. $\int (2x+3) \cdot \sin 6x dx = ?$	81. $\int (3x^2-1) \cdot \cos 5x dx = ?$
82. $\int (x^2+5x-1) \cdot e^{3x+7} dx = ?$	83. $\int (1-x^2) \cdot \operatorname{sh} 4x dx = ?$	84. $\int (1+2x^2) \cdot \operatorname{ch} 3x dx = ?$

b.) Logaritmus, arcus és area függvények integrálása :

85. $\int \ln x dx = ?$	86. $\int \arcsin x dx = ?$	87. $\int \operatorname{arc} \operatorname{tg} x dx = ?$
88. $\int \operatorname{arsh} x dx = ?$	89. $\int \operatorname{arch} x dx = ?$	90. $\int \operatorname{ar} \operatorname{cth} x dx = ?$

c.) Exponenciális függvénnyel szorzott trigonometrikus vagy hiperbolikus függvények integrálása :

91. $\int e^{3x} \cdot \sin 2x dx = ?$	92. $\int 2^x \cdot \cos(3x-1) dx = ?$	93. $\int 3^{2x+1} \cdot \operatorname{sh}(4x-1) dx = ?$
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d.) További feladatok (Parciális integrálás) :

94. $\int \ln^3 x dx = ?$	95. $\int \arcsin^2 x dx = ?$	96. $\int e^{\arcsin x} dx = ?$
97. $\int \sin \sqrt{x} dx = ?$	98. $\int \operatorname{arc} \operatorname{tg} \sqrt{x} dx = ?$	99. $\int x^{-\frac{1}{3}} \cdot \ln^2 x dx = ?$