

INTEGRÁLSZÁMÍTÁS

ISMÉTLÉS

1. $\int \operatorname{ch}(6x - 2) dx$ $\left[\frac{1}{6} \cdot \operatorname{sh}(6x - 2) + c \right]$
2. $\int 3e^{(8x-5)} dx$ $\left[\frac{3}{8} \cdot e^{(8x-5)} + c \right]$
3. $\int \frac{1}{\operatorname{ch}^2(9x + 7)} dx$ $\left[\frac{1}{9} \cdot \operatorname{th}(9x + 7) + c \right]$
4. $\int 5x^2 \cdot (2x^3 + 4)^6 dx$ $\left[5 \cdot \frac{1}{6} \cdot \frac{(2x^3 + 4)^7}{7} + c = \frac{5}{42} \cdot (2x^3 + 4)^7 + c \right]$
5. $\int \frac{7}{\sqrt[8]{11x + 3}} dx$ $\left[7 \cdot \frac{1}{11} \cdot \frac{(11x + 3)^{\frac{7}{8}}}{\frac{7}{8}} + c = \frac{8}{11} \cdot \sqrt[8]{(11x + 3)^7} + c \right]$
6. $\int \frac{-3}{\sin^2(4x + 2)} dx$ $\left[-3 \cdot \frac{1}{4} \cdot (-\operatorname{ctg}(4x + 2)) + c = \frac{3}{4} \cdot \operatorname{ctg}(4x + 2) + c \right]$
7. $\int \cos^5 x \cdot \sin x dx$ $\left[-\frac{(\cos x)^6}{6} + c = -\frac{1}{6} \cdot \cos^6 x + c \right]$
8. $\int 7x^5 \cdot \sqrt[3]{(2x^6 + 9)^4} dx$ $\left[7 \cdot \frac{1}{12} \cdot \frac{(2x^6 + 9)^{\frac{7}{3}}}{\frac{7}{3}} + c = \frac{1}{4} \cdot \sqrt[3]{(2x^6 + 9)^7} + c \right]$
9. $\int \frac{11x^3}{5x^4 + 17} dx$ $\left[11 \cdot \frac{1}{20} \cdot \ln |5x^4 + 17| + c = \frac{11}{20} \cdot \ln(5x^4 + 17) + c \right]$
10. $\int \frac{\operatorname{ch}(8x)}{3 + 2\operatorname{sh}(8x)} dx$ $\left[\frac{1}{16} \cdot \ln |3 + 2\operatorname{sh}(8x)| + c \right]$
11. $\int \operatorname{sh}(e^{4x} + 5) \cdot e^{4x} dx$ $\left[\frac{1}{4} \cdot \operatorname{ch}(e^{4x} + 5) + c \right]$
12. $\int \frac{3 \sin x}{2 + 7 \cos x} dx$ $\left[3 \cdot \left(-\frac{1}{7}\right) \cdot \ln |2 + 7 \cos x| + c = -\frac{3}{7} \cdot \ln |2 + 7 \cos x| + c \right]$
13. $\int \frac{\ln^3 x}{x} dx$ $\left[\frac{(\ln x)^4}{4} + c = \frac{1}{4} \cdot \ln^4 x + c \right]$
14. $\int \frac{8}{x \cdot \ln^5 x} dx$ $\left[8 \cdot \frac{(\ln x)^{-4}}{-4} + c = -2 \cdot \frac{1}{\ln^4 x} + c \right]$
15. $\int \frac{5}{9x^2 + 1} dx$ $\left[5 \cdot \frac{1}{3} \cdot \operatorname{atctg}(3x) + c = \frac{5}{3} \cdot \operatorname{atctg}(3x) + c \right]$

16. $\int \frac{1}{x^2 + 4} dx$ $\left[\frac{1}{4} \cdot 2 \cdot \operatorname{arctg}\left(\frac{1}{2}x\right) + c = \frac{1}{2} \cdot \operatorname{arctg}\left(\frac{1}{2}x\right) + c \right]$
17. $\int \frac{-2}{16x^2 + 25} dx$ $\left[-2 \cdot \frac{1}{25} \cdot \frac{5}{4} \cdot \operatorname{arctg}\left(\frac{4}{5}x\right) + c = -\frac{1}{10} \cdot \operatorname{arctg}\left(\frac{4}{5}x\right) + c \right]$
18. $\int \frac{7}{5x^2 + 3} dx$ $\left[7 \cdot \frac{1}{3} \cdot \sqrt{\frac{3}{5}} \cdot \operatorname{arctg}\left(\sqrt{\frac{5}{3}}x\right) + c = \frac{7\sqrt{15}}{15} \cdot \operatorname{arctg}\left(\frac{\sqrt{15}}{3}x\right) + c \right]$
19. $\int \frac{1}{x^2 + 2x + 5} dx$ $\left[\frac{1}{4} \cdot 2 \cdot \operatorname{arctg}\left(\frac{1}{2}x + \frac{1}{2}\right) + c = \frac{1}{2} \cdot \operatorname{arctg}\left(\frac{1}{2}x + \frac{1}{2}\right) + c \right]$
20. $\int \frac{3}{x^2 - 6x + 34} dx$ $\left[3 \cdot \frac{1}{25} \cdot 5 \cdot \operatorname{arctg}\left(\frac{1}{5}x - \frac{3}{5}\right) + c = \frac{3}{5} \cdot \operatorname{arctg}\left(\frac{1}{5}x - \frac{3}{5}\right) + c \right]$
21. $\int \frac{1}{\sqrt{4 - x^2}} dx$ $\left[\arcsin\left(\frac{1}{2}x\right) + c \right]$
22. $\int \frac{1}{\sqrt{2x - x^2}} dx$ $\left[\arcsin(x - 1) + c \right]$
23. $\int \frac{8}{\sqrt{6x - 9x^2}} dx$ $\left[8 \cdot \frac{1}{3} \cdot \arcsin(3x - 1) + c = \frac{8}{3} \cdot \arcsin(3x - 1) + c \right]$
24. $\int \frac{5}{\sqrt{-4x^2 - 12x - 8}} dx$ $\left[5 \cdot \frac{1}{2} \cdot \arcsin(2x + 3) + c = \frac{5}{2} \cdot \arcsin(2x + 3) + c \right]$
25. $\int \frac{11}{\sqrt{12x - 9x^2 - 3}} dx$ $\left[11 \cdot \frac{1}{3} \cdot \arcsin(3x - 2) + c = \frac{11}{3} \cdot \arcsin(3x - 2) + c \right]$
26. $\int (3x + 2) \cdot \operatorname{sh}(4x) dx$ $\left[\frac{1}{4} \cdot \operatorname{ch}(4x) \cdot (3x + 2) - \frac{3}{16} \cdot \operatorname{sh}(4x) + c \right]$
27. $\int (4 - 7x) \cdot \cos(2x + 1) dx$ $\left[\frac{1}{2} \cdot \sin(2x + 1) \cdot (4 - 7x) - \frac{7}{4} \cdot \cos(2x + 1) + c \right]$
28. $\int (8x^2 + 10) \cdot \ln(5x) dx$ $\left[\left(\frac{8}{3}x^3 + 10x\right) \cdot \ln(5x) - \frac{8}{9}x^3 - 10x + c \right]$
29. $\int \operatorname{arctg}(3x) dx$ $\left[x \cdot \operatorname{arctg}(3x) - \frac{1}{6} \ln|1 + 9x^2| + c = x \cdot \operatorname{arctg}(3x) - \frac{1}{6} \ln(1 + 9x^2) + c \right]$

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30. $\mathbf{B} \int \frac{8}{3x-7} dx$ $\left[\frac{8}{3} \cdot \ln |3x-7| + c \right]$
31. $\mathbf{B} \int \frac{2}{5-9x} dx$ $\left[-\frac{2}{9} \cdot \ln |5-9x| + c \right]$
32. $\mathbf{B} \int \frac{5}{(2x+4)^6} dx$ $\left[-\frac{1}{2} \cdot \frac{1}{(2x+4)^5} + c \right]$
33. $\mathbf{B} \int \frac{13}{(2-11x)^7} dx$ $\left[\frac{13}{66} \cdot \frac{1}{(2-11x)^6} + c \right]$
34. $\mathbf{B} \int \frac{x}{(3x+2)^4} dx$ $\left[-\frac{1}{18} \cdot \frac{1}{(3x+2)^2} + \frac{2}{27} \cdot \frac{1}{(3x+2)^3} + c \right]$
35. $\mathbf{B} \int \frac{7x}{(3x-4)^6} dx$ $\left[-\frac{7}{36} \cdot \frac{1}{(3x-4)^4} - \frac{28}{45} \cdot \frac{1}{(3x-4)^5} + c \right]$
36. $\mathbf{B} \int \frac{6x}{(5x-2)^2} dx$ $\left[-\frac{12}{25} \cdot \frac{1}{(5x-2)} + \frac{6}{25} \cdot \ln |5x-2| + c \right]$
37. $\mathbf{B} \int \frac{3x+1}{(2x-3)^5} dx$ $\left[-\frac{11}{16} \cdot \frac{1}{(2x-3)^4} - \frac{1}{4} \cdot \frac{1}{(2x-3)^3} + c \right]$
38. $\mathbf{B} \int \frac{2}{x^2+4x+5} dx$ $[2 \cdot \operatorname{arctg}(x+2) + c]$
39. $\mathbf{B} \int \frac{17}{x^2+6x+20} dx$
 $\left[\frac{17\sqrt{11}}{11} \cdot \operatorname{arctg} \left(\frac{1}{\sqrt{11}}x + \frac{3}{\sqrt{11}} \right) + c = \frac{17}{\sqrt{11}} \cdot \operatorname{arctg} \left(\frac{1}{\sqrt{11}}x + \frac{3}{\sqrt{11}} \right) + c \right]$
40. $\mathbf{B} \int \frac{x}{x^2+64} dx$ $\left[\frac{1}{2} \cdot \ln |x^2+64| + c = \frac{1}{2} \cdot \ln(x^2+64) + c \right]$
41. $\mathbf{B} \int \frac{7x}{x^2+15} dx$ $\left[\frac{7}{2} \cdot \ln |x^2+15| + c = \frac{7}{2} \cdot \ln(x^2+15) + c \right]$
42. $\mathbf{B} \int \frac{x}{x^2+4x+5} dx$
 $\left[\frac{1}{2} \cdot \ln |x^2+4x+5| - 2 \cdot \operatorname{arctg}(x+2) + c = \frac{1}{2} \cdot \ln(x^2+4x+5) - 2 \cdot \operatorname{arctg}(x+2) + c \right]$
43. $\mathbf{B} \int \frac{5x}{x^2-8x+25} dx$
 $\left[\frac{5}{2} \cdot \ln |x^2-8x+25| + \frac{20}{3} \cdot \operatorname{arctg} \left(\frac{1}{3}x - \frac{4}{3} \right) + c = \frac{5}{2} \cdot \ln(x^2-8x+25) + \frac{20}{3} \cdot \operatorname{arctg} \left(\frac{1}{3}x - \frac{4}{3} \right) + c \right]$

$$44. \mathbf{B} \int \frac{7x+1}{x^2+16} dx \quad \left[\frac{7}{2} \cdot \ln|x^2+16| + \frac{1}{4} \cdot \operatorname{arctg}\left(\frac{1}{4}x\right) + c = \frac{7}{2} \cdot \ln(x^2+16) + \frac{1}{4} \cdot \operatorname{arctg}\left(\frac{1}{4}x\right) + c \right]$$

$$45. \mathbf{B} \int \frac{3x+5}{x^2+6x+13} dx \quad \left[\frac{3}{2} \cdot \ln|x^2+6x+13| - 2 \cdot \operatorname{arctg}\left(\frac{1}{2}x + \frac{3}{2}\right) + c = \frac{3}{2} \cdot \ln(x^2+6x+13) - 2 \cdot \operatorname{arctg}\left(\frac{1}{2}x + \frac{3}{2}\right) + c \right]$$

$$46. \mathbf{B} \int \left(\frac{2}{(x+5)^3} + \frac{3}{4x+1} \right) dx \quad \left[-\frac{1}{(x+5)^2} + \frac{3}{4} \cdot \ln|4x+1| + c \right]$$

$$47. \mathbf{B} \int \left(\frac{8}{(2x+3)^4} - \frac{6}{5x-2} \right) dx \quad \left[-\frac{4}{3} \cdot \frac{1}{(2x+3)^3} - \frac{6}{5} \cdot \ln|5x-2| + c \right]$$

48. Milyen típusú racionális törték összegére bontaná az alábbi törtéket?

$$(a) \mathbf{B} f(x) = \frac{3}{x^2+4x} \quad \left[\frac{A}{x} + \frac{B}{x+4} \right]$$

$$(b) \mathbf{B} f(x) = \frac{x+1}{9x^3+7x^2} \quad \left[\frac{A}{x} + \frac{B}{x^2} + \frac{C}{9x+7} \right]$$

$$(c) \mathbf{B} f(x) = \frac{8x-x^2+3}{x^4-x^3} \quad \left[\frac{A}{x} + \frac{B}{x^2} + \frac{C}{x^3} + \frac{D}{x-1} \right]$$

$$(d) \mathbf{B} f(x) = \frac{5x-6}{x(8x^2+5)} \quad \left[\frac{A}{x} + \frac{Bx+C}{8x^2+5} \right]$$

$$(e) \mathbf{B} f(x) = \frac{2}{x(x^2+x-6)} \quad \left[\frac{A}{x} + \frac{B}{x-2} + \frac{C}{x+3} \right]$$

$$(f) \mathbf{B} f(x) = \frac{6x}{x(x^2+8x+16)} \quad \left[\frac{A}{x} + \frac{B}{x+4} + \frac{C}{(x+4)^2} \right]$$

$$(g) \mathbf{B} f(x) = \frac{x^2}{4x^3+12x^2+9x} \quad \left[\frac{A}{x} + \frac{B}{2x+3} + \frac{C}{(2x+3)^2} \right]$$

$$(h) \mathbf{B} f(x) = \frac{2x^2-7x}{(x+8)(5x^2+3)^3} \quad \left[\frac{A}{x+8} + \frac{Bx+C}{5x^2+3} + \frac{Dx+E}{(5x^2+3)^2} + \frac{Fx+G}{(5x^2+3)^3} \right]$$

$$(i) \mathbf{B} f(x) = \frac{3x^3-2x^2+1}{x(x-1)^2(x^2+1)} \quad \left[\frac{A}{x} + \frac{B}{x-1} + \frac{C}{(x-1)^2} + \frac{Dx+E}{x^2+1} \right]$$

$$(j) \mathbf{B} f(x) = \frac{8x^2+7x^4-9x}{(x+5)^3(2x^2+9)^2(11x-6)} \quad \left[\frac{A}{x+5} + \frac{B}{(x+5)^2} + \frac{C}{(x+5)^3} + \frac{Dx+E}{2x^2+9} + \frac{Fx+G}{(2x^2+9)^2} + \frac{H}{11x-6} \right]$$

49. **B** $\int \frac{2}{x^2 + 2x - 3} dx$ $\left[\frac{1}{2} \cdot \ln|x - 1| - \frac{1}{2} \cdot \ln|x + 3| + c \right]$
50. **B** $\int \frac{3x - 5}{5x^2 + 14x - 3} dx$
 $\left[5x^2 + 14x - 3 = 5\left(x - \frac{1}{5}\right)(x + 3) = (5x - 1)(x + 3); -\frac{11}{40} \cdot \ln|5x - 1| + \frac{7}{8} \cdot \ln|x + 3| + c \right]$
51. **B** $\int \frac{5x + 3}{(x - 1)(x^2 - 6x + 9)} dx$ $\left[2 \cdot \ln|x - 1| - 2 \cdot \ln|x - 3| - 9 \cdot \frac{1}{x - 3} + c \right]$
52. **B** $\int \frac{5x - 48}{x^3 + 16x} dx$ $\left[-3 \cdot \ln|x| + \frac{3}{2} \cdot \ln(x^2 + 16) + \frac{5}{4} \cdot \operatorname{arctg}\left(\frac{1}{4}x\right) + c \right]$
53. **B** $\int \frac{x^2 + 1}{3x^3 - 3x} dx$ $\left[\frac{1}{3} \cdot (\ln|x - 1| - \ln|x| + \ln|x + 1|) + c \right]$
54. **B** $\int \frac{2x^2 + 11x + 16}{x^3 + 4x^2 + 8x} dx$ $\left[2 \cdot \ln|x| + \frac{3}{2} \operatorname{arctg}\left(\frac{1}{2}x + 1\right) + c \right]$
55. **B** $\int \frac{1}{4x^2 + 6x + 2} dx$
 $\left[4x^2 + 6x + 2 = 4\left(x + \frac{1}{2}\right)(x + 1) = (4x + 2)(x + 1); -\frac{1}{2} \cdot \ln|x + 1| + \frac{1}{2} \cdot \ln|4x + 2| + c \right]$
56. **B** $\int \frac{6 + 2x^2 - 3x}{(x^2 + 2)(x + 3)} dx$ $\left[-\frac{1}{2} \cdot \ln(x^2 + 2) + 3 \cdot \ln|x + 3| + c \right]$
57. $\int \frac{3x^2 + 7}{(x^2 + 9)(x - 8)} dx$ $\left[\frac{199}{73} \cdot \ln|x - 8| + \frac{10}{73} \cdot \ln(x^2 + 9) + \frac{160}{219} \cdot \operatorname{arctg}\left(\frac{1}{3}x\right) + c \right]$
58. $\int \frac{x^4 + 3x^3 + 2x^2 + 1}{x^5 + x^3} dx$ $\left[-\frac{1}{2} \cdot \frac{1}{x^2} + \ln|x| + 3 \cdot \operatorname{arctg}x + c \right]$
59. $\int \frac{27x^3 + 29x^2 + 13x + 1}{x(3x + 1)^3} dx$ $\left[\ln|x| - \frac{2}{9} \cdot \frac{1}{3x + 1} - \frac{5}{9} \cdot \frac{1}{(3x + 1)^2} + c \right]$
60. $\int \frac{5x^3 + 11x^2 + 63}{2x^4 + 9x^2} dx$ $\left[\frac{5}{4} \cdot \ln(2x^2 + 9) - \frac{\sqrt{2}}{2} \cdot \operatorname{arctg}\left(\frac{\sqrt{2}}{3}x\right) - 7 \cdot \frac{1}{x} + c \right]$
61. $\int \frac{2x^3 + x^2 + 18x - 9}{x^4 - 81} dx$ $\left[\ln|x - 3| + \ln|x + 3| + \frac{1}{3} \cdot \operatorname{arctg}\left(\frac{1}{3}x\right) + c \right]$
62. $\int \frac{6x^3 + 9x^2 + 72x + 85}{(x^2 + 25)(x^2 + 2x - 15)} dx$
 $\left[\ln(x^2 + 25) + \frac{1}{5} \cdot \operatorname{arctg}\left(\frac{1}{5}x\right) + 2 \cdot \ln|x - 3| + 2 \cdot \ln|x + 5| + c \right]$
63. **B** $\int \frac{2x}{x + 1} dx$ $[2x - 2 \ln|x + 1| + c]$

64. $\mathbf{B} \int \frac{5x}{3x-4} dx$ $\left[\frac{5}{3}x + \frac{20}{9} \cdot \ln|3x-4| + c \right]$
65. $\mathbf{B} \int \frac{x^2}{x+2} dx$ $\left[\frac{1}{2}x^2 - 2x + 4 \cdot \ln|x+2| + c \right]$
66. $\mathbf{B} \int \frac{8x^2}{4x-5} dx$ $\left[x^2 + \frac{5}{2}x + \frac{25}{8} \cdot \ln|4x-5| + c \right]$
67. $\int \frac{x^3 + x^2 + x + 2}{3x^2 + x - 2} dx$
 $\left[3x^2 + x - 2 = 3(x+1)(x - \frac{2}{3}) = (x+1)(3x-2); \frac{1}{6}x^2 + \frac{2}{9}x + \frac{92}{135} \cdot \ln|3x-2| - \frac{1}{5} \cdot \ln|x+1| + c \right]$
68. $\int \frac{5x^5 + 2x^4 - 4x^3 + 3x^2 - 3x + 3}{x^4 + x^2} dx$
 $\left[\frac{5}{2}x^2 + 2x - 3 \cdot \ln|x| - 3 \cdot \frac{1}{x} - 3 \cdot \ln(x^2 + 1) - 2 \cdot \arctg x + c \right]$
69. $\int \frac{2x^4 + 15x^3 + 33x^2 + 22x - 6}{x^2 + 6x + 8} dx$ $\left[\frac{2}{3}x^3 + \frac{3}{2}x^2 - x - 3 \cdot \ln|x+2| + 7 \cdot \ln|x+4| + c \right]$

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70. $\mathbf{B} \int e^x \cdot \sin(e^x) dx$ $[-\cos(e^x) + c; t = e^x]$
71. $\mathbf{B} \int \frac{1}{\sqrt[3]{x^2}} \cdot \cos(\sqrt[3]{x}) dx$ $[3 \cdot \sin(\sqrt[3]{x}) + c; t = \sqrt[3]{x}]$
72. $\mathbf{B} \int \frac{1}{\sqrt[3]{x^2} + x\sqrt[3]{x}} dx$ $[3 \cdot \arctg(\sqrt[3]{x}) + c; t = \sqrt[3]{x}]$
73. $\mathbf{B} \int \frac{e^x}{\cos^2(e^x)} dx$ $[\operatorname{tg}(e^x) + c; t = e^x]$
74. $\mathbf{B} \int e^{\sqrt{x}} dx$ $[2 \cdot \sqrt{x} \cdot e^{\sqrt{x}} - 2 \cdot e^{\sqrt{x}} + c; t = \sqrt{x}]$
75. $\int \frac{2}{4 + \sqrt{x}} dx$ $[4 \cdot \sqrt{x} - 16 \cdot \ln|4 + \sqrt{x}| + c; t = \sqrt{x}]$
76. $\mathbf{B} \int \frac{1}{\sqrt{x} \cdot \sin^2(\sqrt{x})} dx$ $[-2 \cdot \operatorname{ctg}(\sqrt{x}) + c; t = \sqrt{x}]$
77. $\mathbf{B} \int \frac{\cos(\sqrt[3]{x})}{\sqrt[3]{x^2}} dx$ $[3 \cdot \sin(\sqrt[3]{x}) + c; t = \sqrt[3]{x}]$

78. **B** $\int \frac{3}{x + \sqrt{x}} dx$ $[6 \cdot \ln |\sqrt{x} + 1| + c; t = \sqrt{x}]$
79. **B** $\int \frac{e^x}{\sqrt{1 - e^{2x}}} dx$ $[\arcsin(e^x) + c; t = e^x]$
80. **B** $\int \frac{e^x}{(e^x + 2)^3} dx$ $\left[-\frac{1}{2} \cdot \frac{1}{(e^x + 2)^2} + c; t = e^x\right]$
81. $\int \sqrt{x} \cdot \sin(\sqrt{x}) dx$ $[-2 \cdot x \cdot \cos(\sqrt{x}) + 4 \cdot \cos(\sqrt{x}) + 4 \cdot \sqrt{x} \cdot \sin(\sqrt{x}) + c; t = \sqrt{x}]$
82. $\int \frac{e^{2x}}{1 + e^x} dx$ $[e^x - \ln(1 + e^x) + c; t = e^x]$
83. $\int \sin(\ln x) dx$ $\left[-\frac{1}{2} \cdot x \cdot \cos(\ln(x)) + \frac{1}{2} \cdot x \cdot \sin(\ln(x)) + c; t = \ln x\right]$
84. $\int \frac{e^{3x}}{e^x + 2} dx$ $\left[\frac{1}{2} \cdot e^{2x} - 2 \cdot e^x + 4 \cdot \ln(e^x + 2) + c; t = e^x\right]$
85. $\int \frac{5}{e^{2x} + 1} dx$ $\left[5 \cdot \ln(e^x) - \frac{5}{2} \ln(e^{2x} + 1) + c; t = e^x\right]$
86. **B** $\int \operatorname{arctg}(\sqrt{x}) dx$ $[x \cdot \operatorname{arctg}(\sqrt{x}) - \sqrt{x} + \operatorname{arctg}(\sqrt{x}) + c; t = \sqrt{x}]$
87. $\int \frac{\sqrt{x+1} + 1}{\sqrt{x+1} - 1} dx$ $[x + 1 + 4 \cdot \sqrt{x+1} + 4 \cdot \ln |\sqrt{x+1} - 1| + c; t = \sqrt{x+1}]$
88. $\int \frac{\sqrt{x}}{2 - \sqrt{x}} dx$ $[-x - 4\sqrt{x} - 8 \cdot \ln |2 - \sqrt{x}| + c; t = \sqrt{x}]$
89. **B** $\int \cos(\sqrt{x-3}) dx$ $[2 \cdot \cos(\sqrt{x-3}) + 2 \cdot \sqrt{x-3} \cdot \sin(\sqrt{x-3}) + c; t = \sqrt{x-3}]$
90. $\int \frac{2e^{2x} + 3e^x}{e^{2x} + 1} dx$ $[\ln(e^{2x} + 1) + 3 \cdot \operatorname{arctg}(e^x) + c; t = e^x]$
91. $\int \frac{5e^{2x} - 8e^x}{2e^{2x} + 9e^x - 5} dx$ $\left[3 \cdot \ln(e^x + 5) - \frac{1}{2} \cdot \ln |2e^x - 1| + c; t = e^x\right]$
92. **B** $\int \frac{3x - 4}{\sqrt{6x - 7}} dx$ $\left[\frac{1}{18} \cdot \sqrt{(6x - 7)^3} - \frac{1}{6} \cdot \sqrt{6x - 7} + c; t = \sqrt{6x - 7}\right]$
93. **B** $\int \frac{5x + 1}{\sqrt{2 - 3x}} dx$ $\left[\frac{10}{27} \cdot \sqrt{(2 - 3x)^3} - \frac{26}{9} \cdot \sqrt{2 - 3x} + c; t = \sqrt{2 - 3x}\right]$
94. **B** $\int (2x - 3)\sqrt{7x + 2} dx$ $\left[\frac{4}{245} \cdot \sqrt{(7x + 2)^5} - \frac{50}{147} \cdot \sqrt{(7x + 2)^3} + c; t = \sqrt{7x + 2}\right]$
95. **B** $\int (4 - 5x)\sqrt{2 + 9x} dx$ $\left[-\frac{2}{81} \cdot \sqrt{(2 + 9x)^5} + \frac{92}{243} \cdot \sqrt{(2 + 9x)^3} + c; t = \sqrt{2 + 9x}\right]$

96. **B** $\int (4x + 1)\sqrt[4]{3x + 2} dx$ $\left[\frac{16}{81} \cdot \sqrt[4]{(3x + 2)^9} - \frac{4}{9} \cdot \sqrt[4]{(3x + 2)^5} + c; t = \sqrt[4]{3x + 2} \right]$
97. **B** $\int \sin(\sqrt{2x + 5}) dx$ $\left[\sin(\sqrt{2x + 5}) - \sqrt{2x + 5} \cos(\sqrt{2x + 5}) + c; t = \sqrt{2x + 5} \right]$
98. $\int \frac{7\sqrt{x} + 17}{x\sqrt{x} + 4x + 3\sqrt{x}} dx$ $\left[10 \cdot \ln|\sqrt{x} + 1| + 4 \cdot \ln|\sqrt{x} + 3| + c; t = \sqrt{x} \right]$
99. $\int e^{\sqrt{4-2x}} dx$ $\left[-\sqrt{4-2x} \cdot e^{\sqrt{4-2x}} + e^{\sqrt{4-2x}} + c; t = \sqrt{4-2x} \right]$
100. $\int \frac{5\sqrt[3]{x} - 11}{x\sqrt[3]{x} - 3x - 10\sqrt[3]{x^2}} dx$ $\left[9 \cdot \ln|\sqrt[3]{x} + 2| + 6 \cdot \ln|\sqrt[3]{x} - 5| + c; t = \sqrt[3]{x} \right]$
101. $\int \frac{9\sqrt[3]{x^2} + 4\sqrt[3]{x} - 1}{(2\sqrt[3]{x} - 1)(9\sqrt[3]{x^2} + 1)5\sqrt[3]{x^2}} dx$ $\left[\frac{3}{10} \cdot \ln|2\sqrt[3]{x} - 1| + \frac{2}{5} \arctg(3\sqrt[3]{x}) + c; t = \sqrt[3]{x} \right]$
102. $\int \frac{e^x - 8}{e^x + 4} dx$ $\left[3 \cdot \ln(e^x + 4) - 2 \cdot \ln(e^x) + c; t = e^x \right]$
103. $\int \frac{5e^{2x} - 23e^x}{e^{2x} + 4e^x - 5} dx$ $\left[8 \cdot \ln(e^x + 5) - 3 \cdot \ln|e^x - 1| + c; t = e^x \right]$
104. $\int \frac{7 - \sqrt[3]{x}}{(2\sqrt[3]{x} - 1)(\sqrt[3]{x} + 6)3\sqrt[3]{x^2}} dx$ $\left[-\ln|\sqrt[3]{x} + 6| + \frac{1}{2} \cdot \ln|2\sqrt[3]{x} - 1| + c; t = \sqrt[3]{x} \right]$
105. $\int \frac{14}{6\sqrt[3]{x^4} + \sqrt[3]{x^2}} dx$ $\left[7 \cdot \sqrt{6} \cdot \arctg(\sqrt{6} \cdot \sqrt[3]{x}) + c; t = \sqrt[3]{x} \right]$
106. $\int \frac{(6e^{2x} + 30 + 7e^x)e^x}{(e^x + 4)(3e^{2x} + 1)} dx$ $\left[2 \cdot \ln(e^x + 4) + \frac{7}{\sqrt{3}} \cdot \arctg(\sqrt{3} \cdot e^x) + c; t = e^x \right]$
107. $\int \frac{\sqrt[3]{x^2} + 21\sqrt[3]{x} - 32}{(\sqrt[3]{x} + 7)(\sqrt[3]{x^2} + 16)3\sqrt[3]{x^2}} dx$
 $\left[-2 \ln|\sqrt[3]{x} + 7| + \frac{3}{2} \cdot \ln|\sqrt[3]{x^2} + 16| + c = -2 \ln|\sqrt[3]{x} + 7| + \frac{3}{2} \cdot \ln(\sqrt[3]{x^2} + 16) + c; t = \sqrt[3]{x} \right]$
108. $\int_0^{13} (5x - 7)\sqrt[3]{2x + 1} dx$ $\left[886, 07; D = R; t = \sqrt[3]{2x + 1} \right]$
109. $\int_0^3 \frac{\sqrt{x+1}}{x+5} dx$ $\left[0, 71; D = [-1; \infty); t = \sqrt{x+1} \right]$
110. $\int_0^\pi \sin(\sqrt[3]{x}) dx$ $\left[2, 69; D = R; t = \sqrt[3]{x} \right]$
111. $\int_{-2}^1 e^{\sqrt{2-x}} dx$ $\left[\left[-2 \cdot e^{\sqrt{2-x}} \cdot \sqrt{2-x} + 2 \cdot e^{\sqrt{2-x}} \right]_{-2}^1 = 2e^2; D = (-\infty; 2]; t = \sqrt{2-x} \right]$

112. $\int_1^8 \frac{e^{\sqrt[3]{x}}}{\sqrt[3]{x^2}} dx$ $[3e^2 - 3e = 14,01; D = R - \{0\}; t = \sqrt[3]{x}]$
113. $\int_0^5 \frac{x}{\sqrt{3x+1}} dx$ $[4; D = (-\frac{1}{3}; \infty); t = \sqrt{3x+1}]$
114. $\int_{-1}^0 \frac{3}{e^x + 1} dx$ $[1,86; D = R; t = e^x]$
115. $\int_0^1 \frac{4}{e^x + 2} dx$ $[1,09; D = R; t = e^x]$

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116. **B** $\int_2^\infty \frac{1}{x^2} dx$ $[\frac{1}{2}; D = R - \{0\}]$
117. **B** $\int_3^\infty \frac{5}{x^3} dx$ $[\frac{5}{18}; D = R - \{0\}]$
118. **B** $\int_{-\infty}^{-3} \frac{1}{4x^2} dx$ $[\frac{1}{12}; D = R - \{0\}]$
119. **B** $\int_1^\infty \frac{2}{(x+1)^5} dx$ $[\frac{1}{32}; D = R - \{-1\}]$
120. **B** $\int_5^\infty \frac{3}{7x^3} dx$ $[\frac{3}{350}; D = R - \{0\}]$
121. **B** $\int_1^\infty \frac{1}{x} dx$ $[\infty; D = R - \{0\}]$
122. **B** $\int_{-\infty}^{-1} \frac{4}{x} dx$ $[-\infty; D = R - \{0\}]$
123. **B** $\int_e^\infty \frac{1}{x \cdot \ln x} dx$ $[\infty; D = (0; 1) \cup (1; \infty)]$
124. **B** $\int_e^\infty \frac{1}{x \cdot \ln^2 x} dx$ $[1; D = (0; 1) \cup (1; \infty)]$
125. **B** $\int_6^\infty \frac{2}{(x-3)^4} dx$ $[\frac{2}{81}; D = R - \{3\}]$
126. **B** $\int_0^\infty e^{-2x} dx$ $[\frac{1}{2}; D = R]$
127. **B** $\int_{-\infty}^{-1} e^{-4x+3} dx$ $[\infty; D = R]$

128. $\int_{-\infty}^{-1} \frac{x}{x^2 + 1} dx$ $[-\infty; D = R]$
129. **B** $\int_{-\infty}^1 \frac{1}{\sqrt[3]{4 - 3x}} dx$ $[\infty; D = R - \{\frac{4}{3}\}]$
130. **B** $\int_{-\infty}^{-1} \frac{1}{1 + 9x^2} dx$ $[0, 11; D = R]$
131. **B** $\int_1^{\infty} \frac{6}{5\sqrt[3]{x}} dx$ $[\infty; D = R - \{0\}]$
132. $\int_{-\infty}^{-4} \frac{4}{x^2 - 4} dx$ $[\ln(3); D = R - \{-2; 2\}]$
133. $\int_{-\infty}^0 \frac{2}{3 + x^2} dx$ $\left[\frac{\sqrt{3}}{3}\pi; D = R\right]$
134. $\int_3^{\infty} \left(\frac{1}{\sqrt{x+1}} + \frac{1}{(x+1)^2}\right) dx$ $[\infty; D = (-1; \infty)]$
135. $\int_{-\infty}^{\infty} \frac{2}{1 + x^2} dx$ $[2\pi; D = R]$
136. $\int_{-\infty}^{\infty} \frac{4}{1 + x^2} dx$ $[4\pi; D = R]$
137. $\int_{-\infty}^{\infty} e^{3x} dx$ $[\infty; D = R]$
138. $\int_{-\infty}^{\infty} \frac{5}{x^2 - 2x + 2} dx$ $[5\pi; D = R]$
139. $\int_{-\infty}^{\infty} \frac{3}{x^2 + 2x + 2} dx$ $[3\pi; D = R]$
140. **B** $\int_0^3 \frac{1}{\sqrt{x}} dx$ $[2\sqrt{3}; D = (0; +\infty)]$
141. $\int_0^2 \frac{x}{\sqrt{2-x}} dx$ $\left[\frac{8\sqrt{2}}{3}; D = (-\infty; 2)\right]$
142. **B** $\int_{-3}^0 \frac{1}{\sqrt[3]{(x+3)^2}} dx$ $[3\sqrt[3]{3}; D = R - \{-3\}]$
143. **B** $\int_{-3}^0 \frac{1}{(x+3)^2} dx$ $[\infty; D = R - \{-3\}]$
144. **B** $\int_{-2}^0 \frac{7}{(x+2)^3} dx$ $[\infty; D = R - \{-2\}]$

145. $\int_0^2 \frac{3}{(4-2x)^4} dx$ $[\infty; D = R - \{2\}]$
146. $\int_1^5 \frac{1}{\sqrt[5]{(5-x)^3}} dx$ $\left[\frac{5}{2} \cdot \sqrt[5]{16}; D = R - \{5\}\right]$
147. $\int_{\frac{4}{3}}^5 \frac{1}{\sqrt{3x-4}} dx$ $\left[\frac{2\sqrt{11}}{3}; D = \left(\frac{4}{3}; \infty\right)\right]$
148. $\int_{-1}^0 \frac{1}{\sqrt{1-x^2}} dx$ $\left[\frac{\pi}{2}; D = (-1; 1)\right]$
149. $\int_0^2 \frac{1}{\sqrt{4-x^2}} dx$ $\left[\frac{\pi}{2}; D = (-2; 2)\right]$
150. $\int_0^5 \frac{1}{\sqrt{25-x^2}} dx$ $\left[\frac{1}{2}\pi; D = (-5; 5)\right]$
151. **B** $\int_{-1}^0 \frac{3}{(1+x^2) \cdot \operatorname{arctg}^2 x} dx$ $[\infty; D = R - \{0\}]$
152. **B** $\int_0^1 \frac{7}{(1+x^2) \cdot \operatorname{arctg}^3 x} dx$ $[\infty; D = R - \{0\}]$
153. **B** $\int_0^1 \frac{1}{x^2} \cdot e^{\frac{1}{x}} dx$ $[\infty; D = R - \{0\}]$
154. $\int_1^e \frac{1}{x \cdot \sqrt{\ln x}} dx$ $[2; D = (1; \infty)]$
155. $\int_0^{\frac{1}{e}} \frac{1}{x \cdot \ln^3 x} dx$ $\left[-\frac{1}{2}; D = (0; 1) \cup (1; \infty)\right]$
156. $\int_0^{\frac{2}{3}} \frac{3}{\sqrt{4-9x^2}} dx$ $\left[\frac{\pi}{2}; D = \left(-\frac{2}{3}; \frac{2}{3}\right)\right]$
157. $\int_{-1}^1 \frac{x}{\sqrt{1-x^2}} dx$ $[0; D = (-1; 1)]$
158. $\int_0^3 \frac{1}{\sqrt{3x-x^2}} dx$ $[\pi; D = (0; 3)]$
159. $\int_0^6 \frac{1}{\sqrt{6x-x^2}} dx$ $[\pi; D = (0; 6)]$
160. $\int_0^{\frac{\pi}{2}} \frac{\cos x}{\sin^2 x} dx$ $[\infty; D = R - \{k \cdot \pi\}; k \in \mathbb{Z}]$
161. $\int_0^{\frac{\pi}{2}} \frac{\cos x}{\sqrt{\sin x}} dx$ $[2; D = (0 + k \cdot 2\pi; \pi + k \cdot 2\pi); k \in \mathbb{Z}]$

$$162. \int_3^6 \left(\frac{1}{\sqrt[3]{x-6}} + \frac{1}{(x-6)^2} \right) dx \quad [\infty; D = R - \{6\}]$$

$$163. \int_1^3 \left(\frac{1}{\sqrt[3]{3x-9}} + \frac{1}{(3x-9)^2} \right) dx$$

$$164. \int_{-5}^5 \frac{1}{\sqrt[5]{(x+2)^3}} dx \quad [1, 57; D = R - \{-2\}]$$

$$165. \int_1^{10} \frac{1}{\sqrt[3]{(x-2)^2}} dx \quad [9; D = R - \{2\}]$$

$$166. \int_0^5 \frac{1}{\sqrt[5]{(x-4)^4}} dx \quad [11, 60; D = R - \{4\}]$$