

## Egyváltozós analízis integrálszámítás gyakorló feladatok

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$$(1) \int 5x^{10} - \cos x + 4e^x dx = \frac{5}{11}x^{11} - \sin x + 4e^x + C$$

$$(2) \int \sin 8x + \cos \frac{x}{2} dx = -\frac{\cos 8x}{8} + \frac{\sin \frac{x}{2}}{\frac{1}{2}} + C$$

$$(3) \int \operatorname{tg} x dx = -\ln |\cos x| + C$$

$$(4) \int e^{3x+11} dx = \frac{e^{3x+11}}{3} + C$$

$$(5) \int \frac{7e^x + 8e^{3x}}{e^{2x}} dx = -7e^{-x} + 8e^x + C$$

$$(6) \int (2x+5)^7 + \frac{1}{(2x-11)^5} dx = \frac{1}{2} \frac{(2x+5)^8}{8} + \frac{1}{2} \frac{(2x-11)^{-4}}{-4} + C$$

$$(7) \int \frac{2}{9x+1} + \frac{7}{9x^2+1} dx = \frac{2}{9} \ln |9x+1| + 7 \frac{\operatorname{arctg} 3x}{3} + C$$

$$(8) \int e^x (e^x + 2)^{19} dx = \frac{(e^x + 2)^{20}}{20} + C$$

$$(9) \int \frac{2x}{9x^2+3} dx = \frac{1}{9} \ln(9x^2+3) + C$$

$$(10) \int \frac{\operatorname{tg} x}{\cos^2 x} dx = \frac{\operatorname{tg}^2 x}{2} + C = \frac{1}{2 \cos^2 x} + C$$

$$(11) \quad \int \frac{\sqrt[4]{x} \sqrt[5]{x}}{\sqrt[6]{x}} dx = \int \frac{x^{3/10}}{x^{1/6}} dx = \int x^{2/15} dx = \frac{x^{17/15}}{17/15} + C = \frac{15}{17} \sqrt[15]{x^{17}} + C$$

$$(12) \quad \int \operatorname{tg}^2 x dx = \int \frac{\sin^2 x}{\cos^2 x} dx = \int \frac{1 - \cos^2 x}{\cos^2 x} dx = \int \frac{1}{\cos^2 x} dx - \int 1 dx = \operatorname{tg} x - x + C$$

$$(13) \quad \int (2x - 3)^{10} dx = \frac{1}{2} \frac{(2x - 3)^{11}}{11} + C = \frac{(2x - 3)^{11}}{22} + C$$

$$(14) \quad \int x^2(2x^3 + 4) dx = \frac{1}{6} \int 6x^2(2x^3 + 4) dx = \frac{1}{6} \frac{(2x^3 + 4)^2}{2} + C = \frac{(2x^3 + 4)^2}{12} + C$$

$$(15) \quad \int \sin x \cos x dx = \frac{\sin^2 x}{2} + C$$

$$(16) \quad \int \frac{4 \sin x}{5 \cos x + 4} dx = -\frac{4}{5} \int \frac{-5 \sin x}{5 \cos x + 4} dx = -\frac{4}{5} \ln |5 \cos x + 4| + C$$

$$(17) \quad \int x e^{-x} dx = -x e^{-x} + \int e^{-x} dx = -x e^{-x} - e^{-x} + C$$