

Kontrolinis darbas Nr.4 (pavyzdys)

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2019 m. kovo 7 d.

1. Apskaičiuokite integralus (kiekviena užduotis po 1 tašką):

(a) $\int \cos^4 x \, dx$

(b) $\int \cos^7 x \, dx$

(c) $\int \frac{x+1 \, dx}{\sqrt[3]{3x+1}}$

(d) $\int \frac{e^x+1}{e^x-1} \, dx$

2. Apskaičiuokite integralus (kiekviena užduotis po 2 taškus):

(a) $\int \frac{5x-1 \, dx}{x^3-3x-2}$

(b) $\int \frac{x^2 \, dx}{5+4x-x^2}$

(c) $\int \frac{dx}{1+3 \sin^2 x}$

Atsakymai

(a) $\frac{3}{8}x + \frac{\sin 2x}{4} + \frac{\sin 4x}{32} + C$

(b) $\sin x - \sin^3 x + \frac{3}{5} \sin^5 x - \frac{1}{7} \sin^7 x + C$

1. (c) $\ln \left| \frac{x-2}{x+1} \right| - \frac{2}{x+1} + C$

(d) $2 \ln |e^x - 1| - x + C$

(a) $\frac{1}{15}(3x+1)^{\frac{5}{3}} + \frac{1}{3}(3x+1)^{\frac{2}{3}} + C = \frac{1}{5}(x+2)(3x+1)^{\frac{2}{3}} + C$

2. (b) $-\frac{x+6}{2}\sqrt{5+4x-x^2} + \frac{17}{2} \arcsin \frac{x-2}{3} + C$

(c) $\frac{1}{2} \arctan(2 \tan x) + C$