Tema 11

1. Integrați funcțiile raționale:

a) $\int \dfrac{x^4+1}{x^3-x}dx$

b) $\int \dfrac{dx}{x^3+x^4}$

c) $\int \dfrac{dx}{x(x^2+1)}$

d) $\int \dfrac{x}{x^3-1}dx$

2. Calculați integralele nedefinite ale funcțiilor iraționale:

a) $\int \dfrac{1}{(1-x)^2}\sqrt{\dfrac{1-x}{1+x}}dx$

b) $\int \dfrac{\sqrt{1+x}}{x}dx$

c) $\int \dfrac{1}{(1-x)(1+x)^2}\sqrt{\dfrac{1+x}{1-x}}dx$

d) $\int \dfrac{dx}{\sqrt{x^2-4x}}$

e) $\int \dfrac{dx}{\sqrt{x^2-4x-5}}$

f) $\int \dfrac{x+1}{\sqrt{x^2-6x-1}}dx$

g) $\int \dfrac{x-3}{\sqrt{1+6x-x^2}}dx$

h) $\int \dfrac{2x^2+3x+2}{\sqrt{x^2+2x+2}}dx$

i) $\int \dfrac{x^5}{\sqrt{1-x^2}}dx$

3. Calculați integralele nedefinite ale funcțiilor trigonometrice:

a) $\int \dfrac{dx}{5+4\sin x}$

b) $\int \dfrac{dx}{3\sin x-4\cos x}$

c) $\int \dfrac{\cos x}{5+\sin^2 x-4\cos x}dx$

d) $\int \cos^3 x\,dx$

e) $\int \sin^2 x\cos^3 x\,dx$

f) $\int \dfrac{\sin^3 x}{\cos^4 x}dx$

g) $\int \sin^4 x\,dx$

h) $\int \dfrac{dx}{\sin^4 x\cos^4 x}$

i) $\int \sin 5x\cos x\,dx$

4. Integrați cu teorema Newton-Leibniz:

a) $\int\limits_{e}^{2e} \dfrac{dx}{x}$

b) $\int\limits_{\pi/2}^{\pi} \cos x\,dx$

c) $\int\limits_{0}^{1} \dfrac{dx}{1+x^2}$

d) $\int\limits_{0}^{3} \dfrac{x\,dx}{\sqrt{1+x}}$

e) $\int\limits_{0}^{-3} \dfrac{dx}{\sqrt{25+3x}}$

f) $\int\limits_{0}^{1} \dfrac{x\,dx}{\sqrt{1-x^2}}$

g) $\int\limits_{0}^{2} \dfrac{x\,dx}{\sqrt{1+x^2}}$

h) $\int\limits_{0}^{\pi/2} 3^{\cos^2 x}\sin 2x\,dx$