

Φυλλέδιο Ασκήσεων 7

Υπολογίστε τα αρίθμωτα ολοκληρώματα:

1) (α): $\int \frac{x^3}{x^8+2} dx$. (β): $\int \frac{\cos(\sqrt{x})}{\sqrt{x}} dx$. (γ): $\int \frac{\ln(\ln x)}{x} dx$. (δ): $\int \frac{dx}{2x^2+3x+2}$.

(ε): $\int \sqrt{e^x-1} dx$. (ς): $\int x^4 [\ln(x)]^2 dx$. (ζ): $\int x e^{2x} \sin(3x) dx$. (η): $\int \sin[\ln(x)] dx$.

(θ): $\int [\text{Arccsin}(x)]^2 dx$. (ι): $\int \frac{dx}{(x^2+1)^3}$.

2) (α): $\int \frac{x^5+2}{x^2-1} dx$. (β): $\int \frac{dx}{x^3-4x^2}$. (γ): $\int \frac{dx}{x^3+1}$. (δ): $\int \frac{2x^2+2x-7}{(x-2)(x^2+1)^2} dx$.

(ε): $\int \frac{dx}{x^4+1}$ (Υπόσ: $x^4+1 = x^4+1+2x^2-2x^2$). (ς): $\int \frac{1-\sqrt{3x+4}}{1+\sqrt{3x+4}} dx$.

(γ): $\int \frac{e^{2x}+e^x-1}{e^{2x}-2e^x-3} dx$. (θ): $\int \frac{e^x}{(e^x-1)^2+4e^x} dx$.

3) (α): $\int \frac{dx}{\sin(x)}$. (β): $\int \frac{dx}{\sin^3(x)}$. (γ): $\int \sin^4(x) \cos^5(x) dx$. (δ): $\int \sin^4(x) dx$. (ε): $\int \frac{\sin^2(x)}{1+\cos^2(x)} dx$.

(ς): $\int \frac{dx}{2\sin^2(x)+3\cos^2(x)}$. (ζ): $\int \frac{dx}{2+\sin(x)}$. (η): $\int \frac{1+\cos(x)}{2+\sin(x)} dx$ ($-\pi < x < \pi$, για τα (η), (θ)).

(ι): $\int \frac{1-\sin(x)}{1+\sin(x)} dx$, $-\frac{\pi}{2} < x < \frac{\pi}{2}$.

4) (α): $\int \frac{dx}{\sqrt{x^2-3x+2}}$, $x < +L$. (β): $\int \frac{dx}{x\sqrt{x^2-2x+1}}$, $x > 0$. (γ): $\int \frac{\sqrt{x^2+6x+5}}{x} dx$, $x > 0$.

(δ): $\int \frac{dx}{2x+\sqrt{x^2+4}}$, $x > \frac{-2}{\sqrt{3}}$. (ε): $\int \sqrt{4-x^2} dx$. (ς): $\int \frac{dx}{\sqrt{2x+3-x^2}}$.