CHUYÊN ĐỀ TÍCH PHÂN LTĐH DIỄN ĐÀN ONLUYENTOAN.VN

Câu I. Tính các tích phân sau

1. $I = \displaystyle\int_0^{\frac{\pi}{6}} \frac{4\cos 5x \sin 2x}{1 + \tan x \tan \frac{x}{2}} dx$

2. $I = \displaystyle\int_0^1 x.\ln(x^2 + x + 1)dx$

3. $I = \displaystyle\int_0^1 \frac{(x^2 + 2x + 2)e^x}{x^2 + 4x + 4} dx$

4. $I = \displaystyle\int_0^{\frac{\pi}{2}} \ln \frac{(1 + \cos x)^{\sin x + 1}}{\sin x + 1} dx$

5. $I = \displaystyle\int_2^3 \frac{\sqrt{x + 2}}{x + \sqrt{x^2 - 4}} dx$

6. $I = \displaystyle\int_{\frac{1}{e}}^e \frac{\ln x \ln(x^2 + 1)}{x} dx$

7. $I = \displaystyle\int_0^{\frac{\pi}{3}} \frac{x^2}{(x\sin x + \cos x)^2} dx$

8. $I = \displaystyle\int_0^{\frac{\pi}{2}} \frac{\cos x}{(\sqrt{3}\sin x + \cos x)^3} dx$

9. $I = \displaystyle\int_2^6 \frac{dx}{2x + 1 + \sqrt{4x + 1}}$

10. $I = \displaystyle\int_1^e \frac{1 - x(e^x - 1)}{x(1 + xe^x \ln x)} dx$

Câu II. Tính các tích phân sau

1. $I = \displaystyle\int_0^{\sqrt{3}} \frac{x^5 + 2x^2}{\sqrt{x^2 + 1}} dx$

2. $I = \displaystyle\int_0^{\sqrt{3}} \frac{x^2 + 2}{\sqrt{x^2 + 1}} dx$

3. $I = \displaystyle\int_0^1 \frac{1 + (2 + x)xe^{2x}}{1 + xe^x} dx$

4. $I = \displaystyle\int_{\frac{\pi}{3}}^{\frac{\pi}{2}} \frac{\cos x + 2}{\sin 2x + 2\sin x} dx$

5. $I = \displaystyle\int_1^e \sqrt[3]{e^{3x} + 1} e^{2x} dx$

6. $I = \displaystyle\int_{\frac{1}{2}}^{\frac{3}{2}} \left(4x - \frac{3}{x} + 2\right) e^{2\left(x + \frac{3}{4x}\right)} dx$

7. $I = \displaystyle\int_0^{\frac{\pi}{6}} \frac{dx}{\cos^3 x}$

8. $I = \displaystyle\int_1^e \frac{\ln x - 1}{x^2 - (\ln x)^2} dx$

9. $I = \displaystyle\int_0^{\frac{\pi}{2}} \frac{\sin x.(1 + 14x\cos x) - x\sin 4x}{7 - 2\cos 2x} dx.$

10. $I = \displaystyle\int_0^{\frac{\pi}{2}} \frac{\sin x}{\sin^3 x + \cos^3 x} dx$

Câu III. Tính các tích phân sau

1. $I = \displaystyle\int_1^e \frac{\log_2^3 x}{\sqrt{1 + 3\ln^2 x}} dx$

2. $I = \displaystyle\int_0^1 \frac{x^6}{1 + x^{12}} dx$

3. $I = \displaystyle\int_{-3}^{-1} \frac{dx}{(x^2 + 6x + 13)^2}$

4. $I = \displaystyle\int_0^1 \sqrt{x^4 + 3x^3} dx$

5. $I = \displaystyle\int_1^2 \frac{(x - 3)dx}{x(x + 1)(x + 2)}$

6. $I = \displaystyle\int_1^2 \frac{x^2 - 1}{x^4 + 1} dx$

7. $I = \displaystyle\int_{\frac{\pi}{4}}^{\frac{3\pi}{4}} \frac{\sqrt[3]{\sin^3 x - \sin x}}{\sin^3 x} \cot x \, dx$

8. $I = \displaystyle\int_{-1}^1 \frac{x^2 \ln(1 + x^2)}{2^x + 1} dx$

9. $I = \displaystyle\int_0^{\frac{\pi}{2}} \frac{x}{\sin x + \cos x} dx$

10. $I = \displaystyle\int_1^3 (x - 2)\sqrt{\frac{x}{4 - x}} dx$

Câu IV. Tính các tích phân sau

1. $I = \displaystyle\int_1^e \left(\frac{\sqrt{x}\ln x}{1 + \ln x}\right)^2 dx$

2. $I = \displaystyle\int_0^{\frac{\pi}{2}} \frac{\sin 4x}{\cos 3x} dx$

3. $I = \displaystyle\int_0^{\frac{\pi}{4}} \frac{1}{(1 + \sin x)\cos^2 x} dx$

4. $I = \displaystyle\int \frac{xe^x}{e^x + 1} dx$

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5. $I = \displaystyle\int_0^{\frac{\pi}{2}} \frac{dx}{1 + \sin x}$

6. $I = \displaystyle\int_1^e x^x.(\ln x + 1)dx$

7. $I = \displaystyle\int_0^{\frac{\pi}{3}} \frac{x.e^x(4 + 4(\sin x + \cos x) + \sin 2x)}{(1 + \cos x)^2}dx$

8. $I = \displaystyle\int_0^{\ln 2} \frac{(x^2 + 2)e^{2x} + x^2(1 - e^x) - e^x}{e^{2x} - e^x + 1}dx$

9. $I = \displaystyle\int_1^4 \frac{x\ln x dx}{(x^2 + 1)^2}$

10. $I = \displaystyle\int_2^5 \frac{(x - 1)x}{(x + 1)^2 + x^2}dx$

Câu V. Tính các tích phân sau

1. $I = \displaystyle\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \frac{x + \cos x}{4 - \sin^2 x}$

2. $I = \displaystyle\int_{-1}^1 \left(e^x - e^{-x}\right)\sin x dx$

3. $I = \displaystyle\int_{\sqrt{3}}^{2\sqrt{2}} \frac{\sqrt{x^2 + 1}}{x^2}dx$

4. $I = \displaystyle\int_0^{\frac{\sqrt{3}}{3}} \frac{x}{1 - x^4}\ln\left(\frac{3 - x^2}{2}\right)dx$

5. $I = \displaystyle\int_0^{\frac{\pi}{4}} \frac{2x + \cos^2 x}{1 + \sin 2x}dx$

6. $I = \displaystyle\int_0^{\frac{1}{2}} \frac{\ln(1 - x)}{2x^2 - 2x + 1}dx$

7. $I = \displaystyle\int_{\frac{\pi}{4}}^{\frac{\pi}{2}} \frac{x\cos^4(\pi - x)}{\cos^4\left(x - \frac{3\pi}{2}\right) + \sin^4\left(x + \frac{3\pi}{2}\right) - 1}dx$

8. $I = \displaystyle\int_1^e \frac{x\ln x}{(1 + x^2)^2}dx$

9. $I = \displaystyle\int_1^{e^3} \frac{2\ln x + 1}{x(\sqrt{\ln x + 1} + 1)}dx$

10. $I = \displaystyle\int_0^{\frac{\pi}{2}} \frac{\cos^{99} x}{\cos^{99} x + \sin^{99} x}dx$

Câu VI. Tính các tích phân sau

1. $I = \displaystyle\int_{\frac{1}{\sqrt{3}}}^{\sqrt{3}} \frac{1}{1 + x^2 + x^{2010} + x^{2012}}dx$

2. $I = \displaystyle\int_{\sqrt{3}}^{\sqrt{8}} \frac{x^3\ln x}{\sqrt{x^2 + 1}}dx$

3. $I = \displaystyle\int_0^{\frac{\pi}{2}} \frac{\sin x(1 + 14x\cos x) - x\sin 4x}{7 - 2\cos 2x}dx$

4. $I = \displaystyle\int_{\frac{-\pi}{4}}^{\frac{\pi}{4}} \frac{\sin^2 x dx}{\cos^4 x(\tan^2 x - 2\tan x + 5)}$

5. $I = \displaystyle\int_0^1 \frac{\ln(1 + x)dx}{x^2 + 1}$

6. $I = \displaystyle\int_0^{\frac{\pi}{2}} \frac{dx}{\sin x + 2\cos x}$

7. $I = \displaystyle\int_{\frac{\pi}{3}}^{\frac{\pi}{2}} \frac{1}{\sin 2x - 2\sin x}dx$

8. $I = \displaystyle\int_1^2 \frac{x^2 - 1}{(x^2 - x + 1)(x^2 + 3x + 1)}dx$

9. $I = \displaystyle\int_1^2 \frac{x^4 + 1}{x^6 + 1}dx$

10. $I = \displaystyle\int_0^1 \frac{3e^{2x} - 5e^x + 4}{e^x + 1}dx$

Câu VII. Tính các tích phân sau

1. $I = \displaystyle\int_0^{\pi} \frac{x\sin x}{1 + \cos^2 x}dx$

2. $I = \displaystyle\int_0^{\frac{\pi}{12}} \frac{\tan^2 x - 3}{3\tan^2 x - 1}dx$

3. $I = \displaystyle\int_0^1 \frac{x - e^{2x}}{x.e^x + e^{2x}}dx$

4. $I = \displaystyle\int_0^{\frac{\pi}{4}} x.\tan^2 x dx$

5. $I = \displaystyle\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \frac{\sin\left(x + \frac{\pi}{2}\right)}{1 - \sin x + \sqrt{2 - \cos^2 x}}d(x)$

6. $I = \displaystyle\int_{\frac{\pi}{4}}^{\frac{\pi}{2}} \frac{\cot x + 1}{e^x\sin x + 1}dx$

7. $I = \displaystyle\int_0^{\frac{\pi}{2}} \frac{\cos^3 x dx}{2 - \sin 2x}$

8. $I = \displaystyle\int_1^e \frac{x\ln x}{\sqrt{1 + x^2}}dx$

9. $I = \displaystyle\int_{-1}^1 \frac{1}{x^2 + x + 1 + \sqrt{x^4 + 3x^2 + 1}}dx$

10. $I = \displaystyle\int_0^4 \sqrt{x^2 - 6x + 9}dx$

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Câu VIII. Tính các tích phân sau

1. $I = \int_1^2 x\left(1 - \frac{1}{x^4}\right)\left[\ln(x^2+1) - \ln x\right]dx$

2. $I = \int_1^2 \frac{x^3\sqrt{x^3+8} + (3x^3+5x^2)\ln x}{x}dx$

3. $I = \int_0^2 \frac{x\,dx}{\sqrt{2+x} + \sqrt{2-x}}$

4. $I = \int_1^e x\ln x\left(\frac{1}{x^2\left(1+\sqrt{3\ln x+1}\right)} - 1\right)dx$

5. $I = \int_0^{\frac{\pi}{2}} \frac{\cos x\sqrt{1-\sin x}}{\sin x + 3}dx$

6. $I = \int_0^1 \frac{1 + \sqrt[4]{x}}{1 + \sqrt{x}}dx$

7. $I = \int_0^{\frac{\pi}{4}} \frac{\tan x.\ln(\cos x)}{\cos x}dx$

8. $I = \int_0^{\frac{\pi}{2}} \frac{\cos x}{1 + \sin 2x}dx$

9. $I = \int_0^{\frac{\pi}{6}} \frac{1}{\sin^4 x + \cos^4 x}dx$

10. $I = \int_1^2 \sqrt{\frac{1}{x} + 1}\,dx$

Câu IX. Tính các tích phân sau

1. $I = \int_0^{\frac{\pi}{6}} \frac{\tan x + x\tan 2x}{\cos^2 2x}dx$

2. $I = \int_0^{\pi} \frac{x^2\cos^2 x - x\sin x - \cos x - 1}{(1 + x\sin x)^2}$

3. $I = \int_{\frac{\pi}{4}}^{\frac{\pi}{2}} \frac{\sin x + \cos x}{4 + \cos 2x.\tan(x - \frac{\pi}{4})}dx$

4. $I = \int_0^{\frac{\pi}{2}} \frac{\sin 3x}{\sqrt{1 + 3\cos x}}dx$

5. $I = \int_1^e \frac{(1+\ln x)\ln x}{(1 + x + \ln x)^3}dx$

6. $I = \int_0^{\frac{\pi}{4}} \frac{\tan x}{\cos x\sqrt{\cos^2 x + 1}}$

7. $I = \int_0^1 \frac{dx}{1 + \sqrt{x} + \sqrt{x+1}}$

8. $I = \int_0^{\frac{\pi}{4}} (x + \sin^2 2x)\cos 2x\,dx$

9. $I = \int_{1-\sqrt{3}}^0 \frac{dx}{(x-1)\sqrt{x^2 - 2x + 2}}$

10. $I = \int_0^2 \frac{e^{\frac{x}{2}}(x+2)}{x^2 e^x - 9}dx$

Câu X. Tính các tích phân sau

1. $I = \int_1^e \frac{\sin 2x + \ln ex + x\sin 2x\ln x}{1 + x\ln x}dx$

2. $I = \int_1^e \frac{\ln x}{x\sqrt{1 + 3\ln x}}dx$

3. $I = \int_0^1 e^{\sqrt{3x+1}}dx$

4. $I = \int_{\frac{\pi}{4}}^{\frac{\pi}{3}} \frac{1}{\sin x.\cos^3 x}dx$

5. $I = \int_1^2 \frac{x\,dx}{\sqrt[3]{x+1} - \sqrt{x+1}}$

6. $I = \int_0^{\frac{\pi}{2}} \frac{1 + \sin x}{1 + \cos x}e^x dx$

7. $I = \int_1^e \frac{1 - \ln x}{x(x + \ln x)}dx$

8. $I = \int_1^3 \sqrt{\frac{x}{4-x}}dx$

9. $I = \int_0^{\frac{\pi}{2}} \frac{e^x.\sin x}{1 + \sin 2x}dx$

10. $I = \int_0^1 \frac{2x + 1}{x^4 + 2x^3 + 3x^2 + 2x - 3}dx$