

<p style="text-align: center;">Kiểm tra 45 phút tích phân :Đề 1</p> <p>Tính các tích phân sau</p> <p>1) $\int_0^1 x\sqrt{x^2+2}dx$ 2) $\int_{-1}^1 xe^x dx$ 3) $\int_{-1}^1 \frac{2x-3}{x^2-5x+6} dx$ 4) $\int_0^{\frac{\pi}{4}} \sin x \cdot \cos^3 x dx \pi$</p>
<p style="text-align: center;">Kiểm tra 45 phút tích phân:Đề 2</p> <p>Tính các tích phân sau</p> <p>1) $\int_1^2 \frac{x}{x^2+1} dx$ 2) $\int_0^{\frac{\pi}{4}} x \cos x dx$ 3) $\int_2^3 \frac{3x-1}{x^2+5x-6} dx$ 4) $\int_0^{\frac{\pi}{4}} \sin x \cdot \cos^3 x dx$</p>
<p style="text-align: center;">Kiểm tra 45 phút tích phân:Đề 3</p> <p>Tính các tích phân sau</p> <p>1) $\int_{-1}^2 \frac{2x+1}{x^2+2x+4} dx$ 2) $\int_1^e x \ln x dx$ 3) $\int_1^2 \frac{2x-3}{x^2-4x-5} dx$ 4) $\int_0^{\frac{\pi}{3}} t \tan x dx$</p>
<p style="text-align: center;">Kiểm tra 45 phút tích phân:Đề 4</p> <p>Tính các tích phân sau</p> <p>1) $\int_0^1 \frac{e^x}{e^x+2} dx$ 2) $\int_0^{\pi} x \sin x dx$ 3) $\int_{-1}^1 \frac{2x-3}{x^2-5x+6} dx$ 4) $\int_0^{\frac{\pi}{3}} \cos x \cdot \sin^5 x dx$</p>
<p style="text-align: center;">Kiểm tra 45 phút tích phân:Đề 5</p> <p>Tính các tích phân sau</p> <p>1) $\int_0^1 x^2 \sqrt{x^3+2} dx$ 2) $\int_{-1}^1 xe^{2x} dx$ 3) $\int_{-1}^1 \frac{2x-3}{x^2-5x+6} dx$ 4) $\int_0^{\frac{\pi}{3}} \sin x \cdot \cos^3 x dx \pi$</p>
<p style="text-align: center;">Kiểm tra 45 phút tích phân:Đề 6</p> <p>Tính các tích phân sau</p> <p>1) $\int_0^1 xe^{x^2} dx$ 2) $\int_{-1}^1 xe^x dx$ 3) $\int_1^2 \frac{3x-2}{x^2-2x-3} dx$ 4) $\int_0^{\frac{\pi}{4}} \frac{\sin x}{\cos^5 x} dx$</p>
<p style="text-align: center;">Kiểm tra 45 phút tích phân:Đề 7</p> <p>Tính các tích phân sau</p>

$$1) \int_0^1 (2x+1)\sqrt{x^2+x+2} dx \quad 2) \int_{-1}^1 xe^{2x} dx \quad 3) \int_{-2}^1 \frac{2x-3}{x^2+4x+7} dx \quad 4) \int_{\frac{\pi}{4}}^{\frac{\pi}{3}} \cot x dx$$

Kiểm tra 45 phút tích phân: Đề 8

Tính các tích phân sau

$$1) \int_1^2 \frac{\ln^7 x}{x} dx \quad 2) \int_0^{\frac{\pi}{3}} x \cos 2x dx \quad 3) \int_{-1}^0 \frac{2x-3}{x^2+4x-5} dx \quad 4) \int_0^{\frac{\pi}{4}} \sin^6 x \cdot \cos x dx$$

ĐÁP ÁN:

Đáp án

Đề 1

$$\text{Bài 1: } \int_0^1 x\sqrt{x^2+2} dx = \int_0^1 \frac{1}{2} \sqrt{x^2+2} d(x^2+2) = \frac{1}{3} \sqrt{(x^2+2)^3} \Big|_0^1 = \frac{\sqrt{27}-\sqrt{8}}{3}$$

$$\text{Bài 2: } \int_{-1}^1 xe^x dx$$

Đặt

$$u = x$$

$$du = dx$$

$$dv = e^x dx$$

$$v = e^x$$

$$I = xe^x \Big|_{-1}^1 - \int_{-1}^1 e^x dx = e + \frac{1}{e} - e^x \Big|_{-1}^1 = \frac{2}{e}$$

$$\text{Bài 3: } \int_{-1}^1 \frac{2x-3}{x^2-5x+6} dx \quad \text{Tách}$$

$$\frac{2x-3}{x^2-5x+6} = \frac{3}{x-3} - \frac{1}{x-2}$$

$$\text{có } \int_{-1}^1 \frac{2x-3}{x^2-5x+6} dx = (3\ln|x-3| - \ln|x-2|) \Big|_{-1}^1 = \ln \frac{3}{8}$$

Bài 4:

$$\int_0^{\frac{\pi}{4}} \sin x \cdot \cos^3 x dx = -\int_0^{\frac{\pi}{4}} \cos^3 x d \sin x = -\frac{\cos^4 x}{4} \Big|_0^{\frac{\pi}{4}} = \frac{3}{16}$$

Đề 2

$$1) \int_1^2 \frac{x}{x^2+1} dx = \frac{1}{2} \int_1^2 \frac{d(x^2+1)}{x^2+1} = \frac{1}{2} \ln|x^2+1| \Big|_1^2 = \frac{1}{2} \ln \frac{5}{2}$$

2)

$$I = \int_0^{\frac{\pi}{4}} x \cos x dx \text{ Có}$$

$$u=x \quad du=dx$$

3

$$dv=\cos x dx \quad v=\sin x \quad I = x \sin x \Big|_0^{\frac{\pi}{4}} - \int_0^{\frac{\pi}{4}} \sin x dx = \frac{\pi}{4\sqrt{2}} + \cos x \Big|_0^{\frac{\pi}{4}} = \frac{\pi}{4\sqrt{2}} + \frac{1}{\sqrt{2}} - 1$$

$$) \int_2^3 \frac{3x-1}{x^2+5x-6} dx \text{ Tách}$$

$$\frac{3x-1}{x^2+5x-6} = \frac{2}{x-1} - \frac{19}{x+6}$$

$$\text{có } \int_2^3 \frac{3x-1}{x^2+5x-6} dx = \left(\frac{2}{7} \ln|x-1| - \frac{19}{7} \ln|x+6| \right) \Big|_2^3 = \frac{2}{7} \ln 2 + \frac{19}{7} \ln 9 - \frac{19}{7} \ln 8 = \frac{19}{7} \ln 9 - \frac{55}{7} \ln 2$$

$$4) \int_0^{\frac{\pi}{4}} \sin x \cdot \cos^3 x dx = - \int_0^{\frac{\pi}{4}} \cos^3 x d \sin x = - \frac{\cos^4 x}{4} \Big|_0^{\frac{\pi}{4}} = \frac{3}{16}$$

ĐỀ 3:

$$\int_{-1}^2 \frac{2x+1}{x^2+2x+4} dx = \int_{-1}^2 \frac{d(x^2+2x+4)}{x^2+2x+4} dx - \int_{-1}^2 \frac{1}{(x+1)^2+3} dx = \ln|x^2+2x+4| \Big|_{-1}^2 - I_1$$

$$1) \text{ Tính } I_1 = \int_{-1}^2 \frac{1}{(x+1)^2+3} dx$$

$$\text{Cho } x+1 = \sqrt{3} \tan t, dx = \sqrt{3}(1 + \tan^2 t) dt, x = -1 \Rightarrow t = 0, x = 2 \Rightarrow t = \frac{\pi}{3}$$

$$I_1 = \frac{1}{\sqrt{3}} \int_0^{\frac{\pi}{3}} dt = \frac{\pi}{3\sqrt{3}} \Rightarrow I = \ln 4 - \frac{\pi}{3\sqrt{3}}$$

2)

$$\int_1^e x \ln x dx$$

Có

$$u=\ln x \quad du=\frac{dx}{x}$$

$$dv=xdx \quad v=\frac{x^2}{2} \quad I = \frac{x^2}{2} \ln x \Big|_1^e - \frac{1}{2} \int_1^e x dx = \frac{e^2}{2} - \frac{x^2}{4} \Big|_1^e = \frac{e^2}{4} + \frac{1}{4}$$

$$3) \int_1^2 \frac{2x-3}{x^2-4x-5} dx \quad \text{Tách} \quad \frac{2x-3}{x^2-4x-5} = \frac{7}{6} \cdot \frac{1}{x-5} + \frac{5}{6} \cdot \frac{1}{x+1}$$

$$I = \frac{7}{6} \ln|x-5|_1^2 + \frac{5}{6} \ln|x+1|_1^2 = \frac{7}{6} \ln 3 - \frac{14}{6} \ln 2 + \frac{5}{6} \ln 3 - \frac{5}{6} \ln 2$$

$$I = 2 \ln 3 - \frac{19}{6} \ln 2$$

$$4) \int_0^{\frac{\pi}{3}} \tan x dx = - \int_0^{\frac{\pi}{3}} \frac{d(\cos x)}{\cos x} = - \ln |\cos x|_0^{\frac{\pi}{3}} = \ln 2$$

Đề 4

$$1) \int_0^1 \frac{e^x}{e^x+2} dx = \int_0^1 \frac{d(e^x+2)}{e^x+2} dx = \ln|e^x+2|_0^1 = \ln \frac{e+2}{3}$$

$$2) \int_0^{\pi} x \sin x dx$$

Có

$$u=x \quad du=dx$$

$$dv=\sin x dx \quad v=-\cos x \quad I = -x \cos x \Big|_0^{\pi} + \int_0^{\pi} \cos x dx = \pi$$

$$3) \int_{-1}^1 \frac{2x-3}{x^2-5x+6} dx \quad \text{Tách}$$

$$\frac{2x-3}{x^2-5x+6} = \frac{3}{x-3} - \frac{1}{x-2}$$

$$\text{có} \int_{-1}^1 \frac{2x-3}{x^2-5x+6} dx = (3 \ln|x-3| - \ln|x-2|) \Big|_{-1}^1 = \ln \frac{3}{8}$$

$$4) \int_0^{\frac{\pi}{3}} \cos x \cdot \sin^5 x dx$$

$$\int_0^{\frac{\pi}{3}} \cos x \cdot \sin^5 x dx = \int_0^{\frac{\pi}{3}} \sin^4 x d \sin x = \frac{\cos^6 x}{6} \Big|_0^{\frac{\pi}{3}} = \frac{1}{384} - \frac{1}{6} = -\frac{21}{128}$$

Đề 5:

$$1) \int_0^1 x^2 \sqrt{x^3+2} dx = \frac{1}{3} \int_0^1 \sqrt{x^3+2} d(x^3+2) = \frac{2\sqrt{27}}{9} - \frac{2\sqrt{8}}{9}$$

$$2) \int_{-1}^1 x e^{2x} dx$$

$$u = x \quad du = dx$$

$$dv = e^{2x} dx \quad v = \frac{1}{2} e^{2x} \quad I = \frac{1}{2} x e^{2x} \Big|_{-1}^1 - \frac{1}{2} \int_{-1}^1 e^{2x} dx = \frac{e^2}{2} + \frac{1}{2e^2} - \frac{1}{2} e^{2x} \Big|_{-1}^1 = \frac{1}{e^2}$$

$$3) \int_{-1}^1 \frac{2x-3}{x^2-5x+6} dx \text{ Tách}$$

$$\frac{2x-3}{x^2-5x+6} = \frac{3}{x-3} - \frac{1}{x-2}$$

$$\text{có } \int_{-1}^1 \frac{2x-3}{x^2-5x+6} dx = (3 \ln |x-3| - \ln |x-2|) \Big|_{-1}^1 = \ln \frac{3}{8}$$

$$4) \int_0^{\frac{\pi}{3}} \sin x \cdot \cos^3 x dx = - \int_0^{\frac{\pi}{3}} \cos^3 x d \sin x = - \frac{\cos^4 x}{4} \Big|_0^{\frac{\pi}{3}} = -\frac{1}{64} + \frac{1}{4} = \frac{15}{64}$$

Đề 6

$$1) \int_0^1 x e^{x^2} dx = \frac{1}{2} \int_0^1 e^{x^2} dx^2 = \frac{1}{2} e^{x^2} \Big|_0^1 = \frac{e-1}{2}$$

$$2) \int_{-1}^1 x e^x dx$$

$$u = x \quad du = dx$$

$$dv = e^x dx \quad v = e^x \quad I = x e^x \Big|_{-1}^1 - \int_{-1}^1 e^x dx = e + \frac{1}{e} - e^x \Big|_{-1}^1 = \frac{2}{e}$$

$$3) \int_1^2 \frac{3x-2}{x^2-2x-3} dx \text{ Tách}$$

$$\frac{3x-2}{x^2-2x-3} = \frac{7}{4} \cdot \frac{1}{x-3} + \frac{5}{4} \cdot \frac{1}{x+1} \Rightarrow \text{có}$$

$$\int_1^2 \frac{3x-2}{x^2-2x-3} dx = \frac{7}{4} \ln |x-3| \Big|_1^2 + \frac{5}{4} \cdot \ln |x+1| \Big|_1^2 = -\frac{7}{4} \ln 2 + \frac{5}{4} \ln 3 - \frac{5}{4} \ln 2 = \frac{5}{4} \ln 3 - 3 \ln 2$$

$$4) \int_0^{\frac{\pi}{4}} \frac{\sin x}{\cos^5 x} dx = - \int_0^{\frac{\pi}{4}} \frac{d \cos x}{\cos^5 x} = \frac{1}{4 \cos^4 x} \Big|_0^{\frac{\pi}{4}} = \frac{3}{4}$$

Đề 7:

$$1) \int_0^1 (2x+1) \sqrt{x^2+x+2} dx = \int_0^1 \sqrt{x^2+x+2} d(x^2+x+2) = \frac{2}{3} \sqrt{(x^2+x+2)^3} \Big|_0^1 = \frac{16}{3} - \frac{4\sqrt{2}}{3}$$

$$2) \int_{-1}^1 x e^{2x} dx$$

$$u = x \quad du = dx$$

$$dv = e^x dx \quad v = e^x \quad I = x e^x \Big|_{-1}^1 - \int_{-1}^1 e^x dx = e + \frac{1}{e} - e^x \Big|_{-1}^1 = \frac{2}{e}$$

$$3) \int_{-2}^1 \frac{2x-3}{x^2+4x+7} dx = \ln |x^2+4x+7| \Big|_0^1 - 7 \int_0^1 \frac{dx}{(x+2)^2+3} = \ln \frac{12}{7} - 7I_1$$

$$\text{Tính } I_1 = \int_0^1 \frac{dx}{(x+2)^2+3}$$

$$\text{Cho } x+2 = \sqrt{3} \tan t, dx = \sqrt{3} \tan t, x = -2 \text{ thì } t=0 \text{ và } x=1 \text{ thì } t = \frac{\pi}{3}$$

$$\text{và } I_1 = \frac{1}{\sqrt{3}} \int_0^{\frac{\pi}{3}} dt = \frac{1}{3\sqrt{3}} \Rightarrow \int_{-2}^1 \frac{2x-3}{x^2+4x+7} dx = \ln \frac{12}{7} - \frac{7}{3\sqrt{3}}$$

$$4) \int_{\frac{\pi}{4}}^{\frac{\pi}{3}} \cot x dx = \int_{\frac{\pi}{4}}^{\frac{\pi}{3}} \frac{d \sin x}{\sin x} = \ln |\sin x| \Big|_{\frac{\pi}{4}}^{\frac{\pi}{3}} = \ln \frac{3}{2}$$

Đề 8

$$1) \int_1^2 \frac{\ln^7 x}{x} dx = \int_1^2 \ln^7 x d \ln x = \frac{\ln^8 x}{8} \Big|_1^2 = \frac{\ln^8 2}{8}$$

$$2) I = \int_0^{\frac{\pi}{3}} x \cos 2x dx \text{ Có}$$

$$u = x \quad du = dx$$

$$dv = \cos 2x dx \quad v = \frac{1}{2} \sin 2x \quad I = \frac{x}{2} \sin 2x \Big|_0^{\frac{\pi}{3}} - \frac{1}{2} \int_0^{\frac{\pi}{3}} \sin 2x dx = \frac{\sqrt{3}}{12} - \frac{3}{8}$$

$$3) \int_{-1}^0 \frac{2x-3}{x^2+4x-5} dx \text{ Tách } \frac{2x-3}{x^2+4x-5} = -\frac{1}{6} \cdot \frac{1}{x-1} + \frac{13}{6} \cdot \frac{1}{x+5}$$

$$\text{Có } \int_{-1}^0 \frac{2x-3}{x^2+4x-5} dx = -\frac{1}{6} \ln |x-1| \Big|_{-1}^0 + \frac{13}{6} \ln |x+5| \Big|_{-1}^0 = \frac{1}{6} \ln 2 + \frac{13}{6} \ln 5 - \frac{13}{6} \ln 4 = \frac{13}{6} \ln 5 - \frac{25}{6} \ln 2$$

$$4) \int_0^{\frac{\pi}{4}} \sin^6 x \cdot \cos x dx = \int_0^{\frac{\pi}{4}} \sin^5 x \cdot d \sin x = \frac{\sin^7 x}{7} \Big|_0^{\frac{\pi}{4}} = \frac{1}{56\sqrt{2}}$$

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