

تمارين (1)

1- اوجد كلا من التكاملات الآتية

$$1- \int \frac{2x^4-3x+1}{x^3} dx \quad 2- \int (4x-2)(x-5) dx \quad 3- \int \frac{\sqrt[3]{x}-\sqrt{x}}{\sqrt[4]{x^3}} dx$$

$$4- \int (\sqrt{t} - \frac{1}{\sqrt{t}})^2 dt \quad 5- \int \frac{x^4-1}{3-3x^2} dx \quad 6- \int \frac{5x^3-625}{10x-50} dx$$

$$7- \int t(t^2 - \frac{1}{t})^2 dt \quad 8- \int \frac{t\sqrt{t}-1}{t^2} dt \quad 9- \int x^2 \sqrt[3]{5-2x^3}$$

$$10- \int \frac{x-2}{(x^2-4x+3)^3} dx \quad 11- \int \frac{x^2+x}{(4-3x^2-2x^3)^4} dx \quad 12- \int \frac{v}{\sqrt[3]{1-2v^2}} dv$$

$$13- \int \frac{(\sqrt{v}+2)^4}{\sqrt{v}} dv \quad 14- \int (5 - \frac{1}{t})^{-3} (\frac{1}{t^2}) dt \quad 15- \int \frac{3}{\sqrt{4-2y}} dy$$

$$16- \int \frac{1}{\sqrt{y}(1+\sqrt{y})} dy \quad 17- \int \frac{6^{\ln x}}{x} dx \quad 18- \int \frac{e^{-4x}}{5+3e^{-4x}} dx$$

$$18- \int \frac{s}{\sqrt{s^2+5}} ds \quad 19- \int \frac{dr}{\sqrt[5]{r} \sqrt{2+\sqrt[5]{r^4}}} \quad 20- \int \frac{dy}{\sqrt{y+\sqrt{y^3}}}$$

$$21- \int \frac{x}{x^2+1} dx \quad 22- \int \frac{1}{18x+3} dx \quad 23- \int \frac{x^3}{x^4-5} dx$$

$$24- \int \frac{x-2}{x^2-4x+9} dx \quad 25- \int \frac{(2+\ln x)^2}{x} dx \quad 26- \int \frac{x^2}{x^3+1} dx$$

$$27- \int 3e^x e^x dx \quad 28- \int \frac{a^{\sqrt{x+1}}}{\sqrt{1+x}} dx \quad 29- \int \frac{dx}{2+e^{-x}}$$

$$30- \int \frac{3^x+3^{-x}}{3^x-3^{-x}} dx \quad 31- \int \frac{(e^{2x}+e^{3x})}{e^{5x}} dx \quad 32- \int \frac{(5^t+1)^2}{5^t} dt$$

$$33- \int \frac{x^2+x}{4-3x^2-2x^3} dx \quad 34- \int \frac{z}{2-z} dz \quad 35- \int 2^{x \ln x} (1 + \ln x) dx$$

$$36- \int \frac{e^{-p}}{\sqrt{1-3e^{-p}}} dp \quad 37- \int \frac{1}{ex^{\frac{1}{2}} x^3} dx \quad 38- \int \frac{dx}{\sec x \sqrt{4+\sin x}}$$

$$39- \int \frac{e^{-p}}{\sqrt{1-3e^{-p}}} dp \quad 40- D_x \int \frac{2}{\sqrt[3]{x^3+x+7}} dx \quad 41- \int \frac{e^{-x+1}}{e^{x+2}} dx$$

$$42- \int \pi \cos(\mu) dt \quad 43- \int 3^x e^x dx \quad 44- \int \frac{\tan^{-1} t}{2t^2+2} dt$$

$$45- \int \pi^t a^t dt \quad 46- \int \frac{(1+e^x)^2}{e^x} dx \quad 47- \int \frac{dx}{\sec x \sqrt[3]{3(\sin x)^2+6 \sin x+3}}$$

2- وجد قيمة ما يلي

$$1- \int_1^2 \frac{3x}{x^2+4} dx$$

$$2- \int_{-1}^0 \frac{1}{4-5x} dx$$

$$3- \int_1^{e^3} \frac{1}{x} dx$$

$$4- \int_2^3 \frac{x^2-1}{x-1} dx$$

$$5- \int_{\ln 3}^{\ln 5} \frac{e^x}{e^x+4} dx$$

$$6- \int_0^1 x(e^{x^2} + 2) dx$$

$$7- \int_1^4 (\sqrt{x} + \frac{1}{\sqrt{x}}) dx$$

$$8- \int_0^\pi e^\pi dx$$

$$9- \int_{-3}^6 |x-4| dx$$

$$10- \int_0^{\frac{\pi}{2}} \frac{e^{\sin t}}{\sec t} dt$$

$$11- \int_1^{\ln 4} e^x dx$$

$$12- \int_{-1}^5 \frac{e^{-4x}}{5+3e^{-4x}} dx$$

$$13- \int_0^4 \sqrt{3t} (\sqrt{t} - \sqrt{3}) dt$$

$$14- \int_{-3}^2 (2 - |x|) dx$$

$$15- \int_5^5 \sqrt[3]{x^2 + \sqrt{x^5 + 1}} dx$$

$$16- \int_2^3 \frac{x+2}{2x^3+16} dx$$

$$17- \int_{-\pi}^\pi x^2 \cos x dx$$

$$18- D_t \int_0^3 \sqrt{16+t^2} dt$$

$$19- \int_0^3 D_t \sqrt{16+t^2} dt$$

$$20- \int_0^4 \sqrt{16-t^2} dt$$

$$21- \int_{-3}^6 |3x-4| dx$$

$$22- \int_{-2}^1 \frac{1}{2x+7} dx$$

$$23- \int_{-4}^6 |x^2 - x - 2| dx$$

$$24- \int_1^4 \frac{1}{\sqrt{t}e^{\sqrt{t}}} dt$$

$$25- \int_0^2 \frac{\log_2(x+2)}{x+2} dx$$

$$26- \int_{-1}^3 [x] dx$$

3- إذا كان $\int_1^3 f(x) dx = -2$ ، $\int_1^7 f(x) dx = 8$ فاوجد

(a) $\int_3^4 5f(x) dx$ (b) $\int_4^3 f(u) du$ (c) $\int_1^7 f(x) dx - \int_3^4 f(t) dt$

4- اوجد القيمة المتوسطة للدوال الآتية على الفترة المعطاة ثم اوجد قيمة c التي تحقق القيمة المتوسطة

1- $f(x) = x^2 - 1$ on $[0, \sqrt{3}]$

2- $f(x) = -3x^2 - 1$ on $[0, 1]$

3- $f(t) = (t-1)^2$ on $[0, 3]$

4- $g(x) = |x| - 1$ on $[-1, 1]$

1 - اوجد كلا من التكاملات الآتية :

- 1- $\int \frac{x}{x^2+1} dx$
- 2- $\int \frac{1}{18x+3} dx$
- 3- $\int \frac{1}{9-3x} dx$
- 4- $\int \frac{x^3}{x^4-5} dx$
- 5- $\int \frac{x-2}{x^2-4x+9} dx$
- 6- $\int \frac{(2+\ln x)^2}{x} dx$
- 7- $\int \frac{x^2}{x^3+1} dx$
- 8- $\int_1^2 \frac{3x}{x^2+4} dx$
- 9- $\int_{-2}^1 \frac{1}{2x+7} dx$
- 10- $\int_{-1}^0 \frac{1}{4-5x} dx$
- 11- $\int_1^{e^3} \frac{1}{x} dx$
- 12- $\int_1^{\ln 4} e^x dx$
- 12- $\int \frac{e^{-4x}}{5+3e^{-4x}} dx$
- 14- $\int_2^3 \frac{x^2-1}{x-1} dx$
- 15- $\int_{\ln 3}^{\ln 5} \frac{e^x}{e^x+4} dx$
- 16- $\int \frac{6^{\ln x}}{x} dx$
- 17- $\int 2^{x \ln x} (1 + \ln x) dx$
- 18- $\int \frac{e^x}{\sqrt{1-3e^x}} dx$
- 19- $\int_0^1 x(e^{x^2} + 2) dx$
- 20- $\int_0^{\frac{\pi}{2}} \frac{3 \sin x}{\sec x} dx$
- 21- $\int_0^4 \sqrt{3t} (\sqrt{t} - \sqrt{3}) dt$
- 22- $\int_{-1}^5 \frac{e^{-4x}}{5+3e^{-4x}} dx$
- 23- $\int \frac{x^{\sqrt{x+1}}}{\sqrt{1+x}} dx$
- 24- $\int_1^i (\sqrt{x} + \frac{1}{\sqrt{x}}) dx$
- 25- $\int \frac{dx}{2+e^{-x}}$
- 26- $\int_5^5 \sqrt[3]{x^2 + \sqrt{x^5 + 1}} dx$
- 27- $\int \frac{3^x + 3^{-x}}{3^x - 3^{-x}} dx$
- 28- $\int (2x^2 - 3)^5 x dx$
- 29- $\int \frac{(5^t + 1)^2}{5^t} dt$
- 30- $\int 3e^x e^x dx$
- 31- $\int \frac{x-2}{(x^2-4x+3)^3} dx$
- 32- $\int \frac{x^2+x}{4-3x^2-2x^3} dx$

$$33- \int \frac{x}{x^4+2x^2+1} dx$$

$$34- \int \frac{(e^{2x}+e^{3x})}{e^{5x}} dx$$

$$35- \int \frac{e^{x^2} dx}{x^3}$$

$$36- \int_1^4 \frac{1}{\sqrt{t}e^{\sqrt{t}}} dt$$

2 - اوجد كلا من التكاملات الآتية

$$1- \int \sin 3x dx \quad 2- \int \sec^2(2-3x) dx \quad 3- \int x^2 \sec x^3 \tan x^3 dx$$

$$4- \int \frac{1}{\sqrt{t}} \cos \sqrt{t} dt \quad 5- \int \frac{1}{\cos^2 x} \sin(\tan x) dx \quad 6- \int \frac{6}{\sin x \cos x} dx$$

$$7- \int \sin t (1 + \cos t)^2 dt \quad 8- \int \frac{\cot \sqrt[3]{x}}{\sqrt[3]{x^2}} dx \quad 9- \int x \csc^2(3-x^2) dx$$

$$10- \int \sin x \cos x dx \quad 11- \int \frac{\sin x}{\cos^2 x (1 + \sec x)} dx \quad 12- \int \csc^2 v \cot v dv$$

$$13- \int \sin 2x \tan 2x dx \quad 14- \int \cot 8x \sin 8x dx \quad 15- \int \frac{3e^x}{\cos e^x} dx$$

$$16- \int \frac{\tan^2 2x}{\sec 2x} dy \quad 17- \int \frac{\tan e^{3x}}{e^{3x}} dy \quad 18- \int \frac{\cos^2 x}{\csc x} dx$$

$$19- \int \frac{2^{\cot s}}{1 - \cos^2 s} ds \quad 20- \int \frac{dx}{1 - \cos x} dx \quad 21- \int \sqrt{1 + \sin x} dx$$

$$22- \int \tan^2 x dx \quad 23- \int \frac{dx}{\sec x \sqrt{4 + \sin x}} \quad 24- \int \frac{\csc \sqrt{3x-1}}{\sqrt{3x-1}} dx$$

3 - احسب كلا من التكاملات الآتية .

$$1- \int_{\pi/6}^{\pi} \sin x \cos x dx$$

$$2- \int_0^{\pi/4} \tan x \sec^2 x dx$$

$$3- \int_{\pi/6}^{\pi/2} \frac{\cos^2 x}{\sin x} dx$$

$$4- \int_0^{\pi/4} (1 + \sec)^2 dx$$

$$5- \int_{-3}^6 |x - 4| dx$$

$$6- \int_{\pi/4}^{\pi/2} \frac{1 + \sin x}{\cos^2 x} dx$$

$$7- \int_0^{\pi/2} \tan\left(\frac{y}{2}\right) dy$$

$$8- \int_0^{\pi} e^{\pi} dx$$

$$1- \int \frac{\sin x}{\cos^2 x + 1} dx$$

$$2- \int \frac{1}{\sec x \sqrt{4 - \sin^2 x}} dx$$

$$3- \int \frac{1}{\sqrt{x}(1+x)} dx$$

$$4- \int \frac{x^7}{x^{16} + 5} dx$$

$$5- \int \frac{1}{x\sqrt{x^4 - 9}} dx$$

$$6- \int \frac{e^x}{\sqrt{16 - e^{2x}}} dx$$

$$7- \int \frac{e^x}{\sqrt{4 - e^x}} dx$$

$$8- \int_0^4 \frac{1}{x^2 + 16} dx$$

$$9- \int_0^{\sqrt{2}/2} \frac{x}{\sqrt{1 - x^4}} dx$$

$$10- \int_0^1 \frac{e^x}{1 + e^{2x}} dx$$

$$11- \int_{\frac{2}{\sqrt{3}}}^2 \frac{1}{x\sqrt{x^2 - 1}} dx$$

$$12- \int_1^{\ln 4} e^x dx$$

$$13- \int \frac{x \sin^{-1} x^2}{\sqrt{1 - x^4}} dx$$

$$14- \int_0^2 \frac{2}{\sqrt{8 - x^2}} dx$$

$$15- \int \frac{\csc x}{\tan x (1 + 4 \csc^2 x)} dx$$

$$16- \int \frac{1}{x\sqrt{4x^2 - 9}} dx$$

$$17- \int \frac{\csc x}{\tan x (1 + 4 \csc x)} dx$$

$$18- \int \frac{x}{\sqrt{25 - 36x^2}} dx$$

$$19- \int \frac{1}{\sqrt{25 - 36x^2}} dx$$

$$20- \int_0^{\frac{\pi}{2}} \frac{\cos x}{1 + \sin^2 x} dx$$

$$21- \int \frac{1}{(\sin^{-1} t) \sqrt{1 - t^2}} dt$$

$$22- \int \frac{e^{-4x}}{5 + 3e^{-8x}} dx$$

$$23- \int 2^{\tan^{-1} x} \left(\frac{1 - x^2}{1 - x^4} \right) dx$$

$$24- \int \frac{1}{\sqrt{x - x^2}} dx$$

$$25- \int \frac{dx}{2 + e^{-x}}$$

$$26- \int \frac{1}{\sqrt{e^{2x} - 25}} dx$$

$$27- \int \frac{1}{x\sqrt{x-1}} dx$$

$$28- \int \frac{1}{\sqrt{t+1} (2+t)} dt$$

$$29- \int_{\frac{\pi}{2}}^{\pi} \sqrt{1 + \cos 2x} dx$$

$$30- \int x \left(\frac{3}{x^3} - \frac{1}{x^2} \right)^{\frac{1}{3}} dx$$

$$31- \int \left(\frac{1}{\cos x (1 + \tan x)} \right)^2 dx$$

$$32- \int \frac{1}{x + \ln x^x} dx$$

$$33- \int \frac{\cos x}{\sin^2 x + 2 \sin x + 1} dx$$

$$34- \int x \sqrt[3]{x^4 - 10x^2 + 25} dx$$

$$35- \int \frac{\operatorname{csch}^2 x}{4 + 2 \coth x} dx$$

$$36- \int \tanh^3 x \operatorname{sech}^2 x dx$$

$$37- \int \coth 4x \, dx$$

$$39- \int \frac{e^{\sinh x}}{\operatorname{sech} x} \, dx$$

$$41- \int \frac{\cosh(\frac{1}{x^4})}{x^5} \, dx$$

$$43- \int \frac{8}{e^{2x} + e^{-2x} - 2} \, dx$$

$$45- \int \sqrt{\cosh x + 1} \, dx$$

$$47- \int \frac{\operatorname{sech} x \tanh x}{\sqrt{4 - \operatorname{sech}^2 x}} \, dx$$

$$49- \int \frac{1}{x \sqrt{(\ln x)^2 - 49}} \, dx$$

$$51- \int \frac{1}{x \sqrt{16 - 4x^4}} \, dx$$

$$53- \int \frac{1}{x \sqrt{9 - x^4}} \, dx$$

$$55- \int \frac{\sin x}{\sqrt{1 + \cos^2 x}} \, dx$$

$$57- \int \frac{1}{x \sqrt{4x^2 - 9}} \, dx$$

$$59- \int \frac{1}{\sqrt{9 - 4x^2}} \, dx$$

$$61- \int \frac{1}{\sqrt{25x^2 + 36}} \, dx$$

$$63- \int \frac{e^{2x}}{\sqrt{1 - e^{2x}}} \, dx$$

$$65- \int \operatorname{sech}^2 x (1 + \tanh x)^2 \, dx$$

$$38- \int \frac{\operatorname{csch} \sqrt{x}}{\sqrt{x}} \, dx$$

$$40- \int \operatorname{sech}(\ln x) \, dx$$

$$42- \int \frac{\operatorname{sech}(\ln x)}{x} \, dx$$

$$44- \int \frac{\operatorname{sech}^5 x}{\operatorname{csch} x} \, dx$$

$$46- \int \frac{1}{(x^2 + 1)(4 - \tan^{-1} x)} \, dx$$

$$48- \int \frac{x^3}{16 - x^6} \, dx$$

$$50- \int \frac{e^{5x}}{e^{10x} - 9} \, dx$$

$$52- \int \frac{1}{\sqrt{x^2 + x}} \, dx$$

$$54- \int \frac{1}{\sqrt{5 - e^{2x}}} \, dx$$

$$56- \int \frac{2}{5 - 3x^2} \, dx$$

$$58- \int \frac{1}{x \sqrt{9 - 4x^2}} \, dx$$

$$60- \int \frac{x}{\sqrt{9 - 4x^2}} \, dx$$

$$62- \int \frac{x}{\sqrt{25x^2 + 36}} \, dx$$

$$64- \int \frac{e^x}{\sqrt{1 - e^{2x}}} \, dx$$

$$66- \int x \coth x^2 \, dx$$

استاد المقرری: علی علی محمدی

ریاضه (2)

تاریخ:

احباب الكامله الى الابد

(1) $\int x e^{-x} dx$

(2) $\int x^2 e^{3x} dx$

(3) $\int x \cos 5x dx$

(4) $\int x \sec x \tan x dx$

(5) $\int x^2 \cos x dx$

(6) $\int \tan^{-1} x dx$

(7) $\int \sqrt{x} \ln x dx$

(8) $\int x \csc^2 x dx$

(9) $\int e^x \sin x dx$

(10) $\int \sin x \ln \cos x dx$

(11) $\int \left(\frac{1}{\cos x} \right)^3 dx$

(12) $\int_0^1 \frac{x^3}{\sqrt{x^2+1}} dx$

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

(14) $\int x (2x+3)^{99} dx$

(15) $\int e^{4x} \sin 5x dx$

(16) $\int (\ln x)^2 dx$

(17) $\int x^3 \sinh x dx$

(18) $\int \cos \sqrt{x} dx$

(19) $\int \cos^{-1} x dx$

(20) $\int_0^1 x^3 e^{-x^2} dx$

(21) $\int \cos^3 x dx$

(22) $\int \sin^2 x \cos^2 x dx$

(23) $\int \sin^3 x \cos^3 x dx$

(24) $\int \sin^6 x dx$

(25) $\int \tan^3 x \sec^3 x dx$

(26) $\int \tan^3 x \sec^3 x dx$

(27) $\int \tan^6 x dx$

(28) $\int \sqrt{\sin x} \cos^3 x dx$

(29) $\int (\tan x + \cot x)^2 dx$

(30) $\int_0^{\frac{\pi}{4}} \sin^3 x dx$

(31) $\int \sin 5x \sin 3x dx$

(32) $\int_0^{\frac{\pi}{2}} \sin 3x \cos 2x dx$

$$(33) \int \csc^4 x \cot^4 x dx$$

$$(34) \int \frac{\cos x}{2 - \sin x} dx$$

$$(35) \int \frac{\sec^2 x}{(1 + \tan x)^2} dx$$

$$(36) \int \frac{\sec x}{\cot^5 x} dx$$

$$(1) -(x+1)e^{-x} + C$$

$$(2) e^{3x} \left[\frac{x^2}{3} - \frac{2x}{9} + \frac{2}{27} \right] + C$$

$$(3) \frac{1}{25} \cos 5x + \frac{1}{5} x \sin 5x + C$$

$$(4) x \sec x - \ln |\sec x + \tan x| + C$$

$$(5) (x^2 - 2) \sin x + 2x \cos x + C$$

$$(6) x \tan^{-1} x - \frac{1}{2} \ln(1+x^2) + C$$

$$(7) \frac{2}{9} x^{3/2} (3 \ln x - 2) + C$$

$$(8) -x \cot x + \ln |\sin x| + C$$

$$(9) -\frac{1}{2} e^{-x} (\cos x + \sin x) + C$$

$$(10) \cos x (1 - \ln \cos x) + C$$

$$(11) \frac{1}{2} (\sec x \tan x + \ln |\sec x + \tan x|) + C$$

$$(12) \frac{1}{3} (2 - \sqrt{2})$$

$$(13) \frac{\pi}{4}$$

$$(14) \frac{1}{40400} (2x+3)^{100} (200x-3) + C$$

$$(15) \frac{e^{4x}}{41} (4 \sin 5x - 5 \cos 5x) + C$$

$$(16) x(\ln x)^2 - 2x \ln x + 2x + C$$

$$(17) x^3 \cosh x - 3x^2 \sinh x + 6x \cosh x - 6 \sinh x + C$$

$$(18) 2 \cos \sqrt{x} + 2\sqrt{x} \sin \sqrt{x} + C$$

$$(19) x \cos^{-1} x - \sqrt{1-x^2} + C$$

$$(20) \frac{1}{2} - e^{-1}$$

$$(21) \sin x - \frac{1}{3} \sin^3 x + C$$

$$(22) \frac{1}{8} x - \frac{1}{32} \sin 4x + C$$

$$(23) \frac{1}{5} \cos^5 x - \frac{1}{3} \cos^3 x + C$$

$$(24) \frac{1}{8} \left(\frac{5}{2} x - 2 \sin 2x + \frac{3}{8} \sin 4x + \frac{1}{6} \sin^3 2x \right) + C$$

$$(25) \frac{1}{4} \tan^4 x + \frac{1}{6} \tan^6 x + C$$

$$(26) \frac{1}{5} \sec^5 x - \frac{1}{3} \sec^3 x + C$$

$$(27) \frac{1}{5} \tan^5 x - \frac{1}{3} \tan^3 x + \tan x - x + C$$

$$(28) \frac{2}{3} \sin^{\frac{3}{2}} x - \frac{2}{7} \sin^{\frac{7}{2}} x + C$$

$$(29) \tan x - \cot x + C$$

$$(30) \frac{2}{3} - \frac{5}{6} \sqrt{2}$$

$$(31) \frac{1}{4} \sin 2x - \frac{1}{16} \sin 8x + C$$

$$(32) \frac{3}{5}$$

$$(33) -\frac{1}{5} \cot^5 x - \frac{1}{7} \cot^7 x + C$$

$$(34) -\ln |2 - \sin x| + C$$

$$(2)$$

$$(37) \int \cos^{-1} x \, dx$$

$$(38) \int \cos \sqrt{x} \, dx$$

$$(39) \int \sqrt{x} \ln x \, dx$$

$$(40) \int e^{-x} \sin x \, dx$$

$$(41) \int e^{3x} \cos 2x \, dx$$

$$(42) \int \frac{x e^x}{(1+x)^2} \, dx$$

$$(43) \int_0^{\pi} x \cos(2x - \frac{\pi}{2}) \, dx$$

$$(44) \int \frac{\ln x}{x^3} \, dx$$

$$(45) \int e^{2x} \cos e^x \, dx$$

$$(46) \int e^x \sec^3 e^x \, dx$$

$$(47) \int (\sin^{-1} x)^2 \, dx$$

$$(48) \int \ln(x + \sqrt{x^2 + 4}) \, dx$$

$$(49) \int \sec^4(1-2x) \, dx$$

$$(50) \int x \tan^3(5x^2) \, dx$$

$$(51) \int \sqrt{\cos x} \sin^5 x \, dx$$

$$(52) \int \cos^2(2x) \, dx$$

$$(53) \int \sinh^3(4x) \cosh^2(4x) \, dx$$

$$(54) \int \tan^3 x \sec^4 x \, dx$$

$$(55) \int \sqrt{\sin x} \cos^3 x \, dx$$

$$(56) \int \tan^3 x \sec^3 x \, dx$$

$$(57) \int_0^{\frac{\pi}{4}} \sin^3 x \, dx$$

$$(58) \int \tan^5 x \sec x \, dx$$

$$(59) \int \cot^3 x \csc^2 x \, dx$$

$$(60) \int_0^{\frac{\pi}{2}} \sin 3x \cos 2x \, dx$$

$$(61) \int \csc^4 x \cot^4 x dx$$

$$(63) \int \frac{\tan^2 x - 1}{\sec^2 x} dx$$

$$(65) \int \sin 3x \sin x dx$$

$$(67) \int \sec^6 x dx$$

$$(69) \int \frac{\sqrt{4-x^2}}{x^2} dx$$

$$(71) \int \frac{1}{x^3 \sqrt{x^2-25}} dx$$

$$(73) \int \frac{1}{x^3 \sqrt{x^2-25}} dx$$

$$(75) \int \frac{x^3}{\sqrt{9x^2+49}} dx$$

$$(77) \int \frac{1}{(36+x^2)^2} dx$$

$$(79) \int e^x \sqrt{e^{2x}-9} dx$$

$$(81) \int \frac{\cot \theta}{\ln 2} \frac{1}{1+\sin^2 \theta} d\theta$$

$$(83) \int_{-\ln 4}^{\infty} e^{\theta} \cosh \theta d\theta$$

$$(85) \int \frac{(16-9x^2)^{\frac{3}{2}}}{x^6} dx$$

(4)

$$(62) \int (1+\sqrt{\cos x})^2 \sin x dx$$

$$(64) \int \frac{\sec x}{\cot^5 x} dx$$

$$(66) \int \tan^6 x dx$$

$$(68) \int \frac{x^2}{\sqrt{4-x^2}} dx$$

$$(70) \int \frac{1}{x \sqrt{9+x^2}} dx$$

$$(72) \int \frac{x}{\sqrt{4-x^2}} dx$$

$$(74) \int \frac{1}{\sqrt{(16-x^2)^{\frac{5}{2}}}} dx$$

$$(76) \int \frac{3x-5}{\sqrt{1-x^2}} dx$$

$$(78) \int \frac{x^2}{(1-9x^2)^{\frac{3}{2}}} dx$$

$$(80) \int \sin x \sqrt{1+\cos^2 x} dx$$

$$(82) \int \frac{x^5}{\sqrt{1+x^2}} dx$$

$$(84) \int e^{-x} \tan^{-1} e^x dx$$

$$(86) \int_1^{\sqrt{2}} \frac{e^{2x}-1}{e^{2x}+1} dx$$



كلية الهندسة جامعة القادسية

م. باقر عبد الله

تفانينا 5

واجبة 2

أوجد كلًا من التكاملات الآتية

$$1. \int_0^{\sqrt{2}/2} \frac{x}{\sqrt{1-x^4}} dx$$

$$(2) \int \frac{(1+e^x)^2}{e^{2x}} dx$$

$$3. \int \sqrt{x} \sin \sqrt{x} dx$$

$$(4) \int \cos \sqrt{x} dx$$

$$(9) \int \sqrt{x} (6-x) dx$$

$$(6) \int \frac{e^x}{e^{2x} + 3e^x - 2} dx$$

$$(7) \int \frac{2x}{(x^2+2x+5)^2} dx$$

$$(8) \int \frac{dx}{x\sqrt{x^6-4}}$$

$$(9) \int \frac{dx}{\sqrt{16e^{4x}-3}}$$

$$(10) \int \frac{d\theta}{1-\cos\theta}$$

$$(11) \int_1^3 [x] dx$$

$$(12) \int \frac{x^2 dx}{1+4x^6}$$

$$(13) \int \frac{dt}{t\sqrt{t^4-1}}$$

$$(14) \int \frac{dx}{x\sqrt{x^4-3}}$$

$$(15) \int \frac{dx}{\sqrt{x^{10}-x}}$$

$$(16) \int \frac{dt}{t^2+3t+1}$$

$$(17) \int \frac{t^2}{t^6+2t^3-5} dt$$

$$(18) \int \frac{3^x dx}{3^{2x}+3^x+1}$$

$$(20) \int \frac{3x-5}{\sqrt{1-x^2}} dx$$

$$(21) \int \sqrt{9-4x^2} dx$$

$$(22) \int \frac{x^2}{\sqrt{4-x^2}} dx$$

$$(23) \int \frac{dx}{x^2\sqrt{x^2+9}}$$

$$(24) \int \frac{dx}{\sqrt{7+6x-x^2}}$$

$$(25) \int \frac{dx}{2x^2-3x+9}$$

(1)



$$(26) \int \frac{dx}{(x^2+6x+13)^{\frac{3}{2}}}$$

$$(27) \int \frac{dx}{\sqrt{4x-x^2}}$$

$$(28) \int \frac{\sqrt{e^{2x}-1}}{e^{-x}} dx$$

$$(29) \int e^{4[\ln \sin x - \ln \cos x]} dx$$

$$(30) \int \frac{d\theta}{2 \cos^2 \theta \sec \theta + 3 \cos \theta \sec \theta + \sin \theta}$$

- اوجد كلا من التكاملات الآتية :

1- $\int x^3 \sqrt{x+9} dx$

2- $\int \frac{x}{\sqrt[5]{3x+2}} dx$

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

4- $\int \frac{x^7}{x^{16}+5} dx$

5- $\int \frac{1}{\sqrt{x+4}} dx$

6- $\int \frac{1}{\sqrt{4+\sqrt{x}}} dx$

7- $\int \frac{\sqrt{x}}{\sqrt[3]{x+1}} dx$

8- $\int_1^2 \frac{1}{\sqrt[4]{x}+\sqrt[3]{x}} dx$

9- $\int \frac{dx}{(x+1)\sqrt{x-1}}$

10- $\int \frac{2x+3}{\sqrt{1+2x}} dx$

11- $\int \frac{x+1}{(x+4)^{1/3}} dx$

12- $\int \frac{x^{1/3}+1}{x^{1/3}-1} dx$

12- $\int \frac{e^{2x}}{4+e^x} dx$

14- $\int \frac{e^{2x}}{\sqrt[3]{1+e^x}} dx$

15- $\int e^{3x} \sqrt{1+e^x} dx$

16- $\int \cos x \sqrt{\sin^2 x - 4} dx$

17- $\int \sin \sqrt{x+4} dx$

18- $\int \sqrt{x} e^{\sqrt{x}} dx$

19- $\int \frac{\sin 2x}{\sqrt{1+\sin x}} dx$

20- $\int \frac{x dx}{(x-1)^6}$

21- $\int \frac{x^2}{(3x+4)^{10}} dx$

22- $\int \frac{1}{2+\sin x} dx$

23- $\int \frac{1}{2+\sin x+\cos x} dx$

24- $\int \frac{1}{3+2\cos x} dx$

25- $\int \frac{1}{\tan x+\sin x} dx$

26- $\int \frac{1}{\sin x-\sqrt{3}\cos x} dx$

27- $\int \frac{\sec x}{4-3\tan x} dx$

28- $\int e^x \sqrt{1+e^x} dx$

29- $\int \frac{e^{3x}}{e^x+1} dx$

30- $\int x^2 \tan^{-1} x dx$

31- $\int \frac{1}{x^2-4x+8} dx$

32- $\int \frac{1}{\sqrt{7+6x-x^2}} dx$

$$33- \int \frac{1}{\sqrt{4x-x^2}} dx$$

$$34- \int \frac{1}{x^2-2x+2} dx$$

$$35- \int \frac{2x+3}{\sqrt{9-8x-x^2}} dx$$

$$36- \int \frac{x+5}{9x^2+6x+17} dx$$

$$37- \int \frac{1}{(x^2+4x+5)^2} dx$$

$$38- \int \frac{1}{(x^2+6x+13)^{3/2}} dx$$

$$39- \int \frac{1}{2x^2-3x+9} dx$$

$$40- \int \frac{x^3}{x^3-1} dx$$

كلية الهندسة جامعة مصر، القسم العام
المادة / رياضة 2 تمارين 7 عدد من الامتحان: P علم على اثنان

1. أوجد التكاملات الآتية

$$(1) \int x \sin^2 x \, dx$$

$$(2) \int x^2 \tan^2 x \, dx$$

$$(3) \int \frac{x}{5x^4 - 3} \, dx$$

$$(4) \int \frac{dx}{\sin 2x + \cos 2x} \, dx$$

$$(5) \int \frac{5x^2 - 10x - 8}{x^3 - 4x} \, dx$$

$$(6) \int \frac{x^6 - x^3 + 1}{x^4 + 9x^2} \, dx$$

$$(7) \int \frac{x^3 + 3x - 2}{x^2 - x} \, dx$$

$$(8) \int \frac{e^x}{e^{-2x} - 4} \, dx$$

$$(9) \int \frac{1}{4 \sec x - \tan x \sin x} \, dx$$

$$(10) \int \sqrt{x-3} \sqrt{2-x} \, dx$$

2. ارسم المساحة المحددة بالمنحنيات الآتية وادرس المساحة المحصورة

$$(1) y = \frac{1}{x^2}, y = -x^2, x = 1, x = 2$$

$$(2) y^2 = -x, x - y = 4, y = -1, y = 2$$

$$(3) y = \sqrt{x}, y = -x, x = 1, x = 4$$

$$(4) y = 1 - x^2, y = x - 1$$

$$(5) y = 3 - x, y + x^2 = 3$$

$$(6) x = y^2, x - y - 2 = 0$$

$$(7) y = x, y = 3x, x + y = 4$$

$$(8) \quad y = x^3 - x, \quad y = 0$$

$$(9) \quad y = x^3 - x^2 - 6x, \quad y = 0$$

$$(10) \quad y = x\sqrt{4-x^2}, \quad y = 0$$

$$(11) \quad x = 4y - y^3, \quad y = 0$$

$$(12) \quad y^2 = 4 + x \quad \text{and} \quad y^2 + x = 2$$

استاذ المقرر / علي علي ابو فلفل

رياضة ③

ممارسة (التحليل الشافعي)

1- اوجد التكاملات الآتية

① $\int_1^2 \int_1^2 (12xy^2 - 8x^3) dy dx$

③ $\int_{-2}^0 \int_{-1}^3 (4xy^3 - 8x^3) dy dx$

② $\int_{-1}^2 \int_1^2 (12xy^2 - 8x^3) dx dy$

④ $\int_0^3 \int_{-2}^{-1} (4xy^3 - 8x^3) dx dy$

② اوجد قيمة التكاملات الآتية

① $\int_1^2 \int_{1-x}^{\sqrt{x}} x^2 y dy dx$

③ $\int_0^2 \int_{y^2}^{2y} (4x - y) dx dy$

② $\int_{-1}^1 \int_{x^3}^{x+1} (3x + 2y) dy dx$

④ $\int_0^1 \int_{-y-1}^{y-1} (x^2 + y^2) dx dy$

⑤ $\int_0^{\pi/6} \int_0^{\pi/2} (x \cos y - y \cos x) dy dx$

⑥ $\int_0^1 \int_y^1 \frac{1}{1+y^2} dx dy$

⑦ $\int_{\pi/6}^{\pi/4} \int_{\tan x}^{\sec x} (y + \sin x) dy dx$

④ اوجد قيمة ما يلي

① $\int_0^9 \int_{\sqrt{y}}^3 \sin x^3 dx dy$

② $\int_0^2 \int_{y^2}^4 y \cos x^2 dx dy$

③ $\int_0^e \int_0^{\ln x} y dy dx$

④ $\int_0^1 \int_x^1 \frac{1}{y} \sin y \cos \frac{x}{y} dy dx$

③ $\int_{\pi/6}^{\pi/4} \int_0^{\sin x} e^{\cos x} \cos x dy dx$

①