

## GUÍA DE EJERCICIOS # 5

MA – 1112

I.- Calcular las siguientes integrales indefinidas:

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

(2)  $\int \frac{y+3}{(3-y)^{2/3}} dy$

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

(4)  $\int \frac{x^3}{(x^2+4)^{3/2}} dx$

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

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

(7)  $\int \frac{x^2}{(x-1)^4} dx$

(8)  $\int \sqrt{t} \sqrt{1+t\sqrt{t}} dt$

(9)  $\int x e^{-5x} dx$

(10)  $\int x e^{3x+1} dx$

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

(12)  $\int \ln 4x dx$

(13)  $\int \frac{t}{e^t} dt$

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

(15)  $\int \frac{12x}{\sqrt{1+4x}} dx$

(16)  $\int \frac{x}{(5x+2)^3} dx$

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

(18)  $\int \frac{\ln x}{x^2} dx$

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

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

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

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

(23)  $\int \sqrt[3]{x} \ln(x^5) dx$

(24)  $\int 3(2x-2) \ln(x-2) dx$

(25)  $\int \ln[\ln x] \left(\frac{1}{x}\right) dx$

(26)  $\int (2^x + x)^2 dx$

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

(28)  $\int x^3 \sqrt{1+x^2} dx$

(29)  $\int \frac{\ln(x+3)}{\sqrt{x+3}} dx$

(30)  $\int \ln(x + \sqrt{x^2 + 1}) dx$

(31)  $\int \operatorname{sen}(\ln x) dx$

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

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

(34)  $\int x \operatorname{senh}(x) dx$

(35)  $\int x \sec^2 x dx$

(36)  $\int x^2 \operatorname{sen}(3x) dx$

(37)  $\int (\operatorname{sen} x)^{\frac{1}{2}} \cos x dx$

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

(39)  $\int \operatorname{sen}^2 x \cos^4 x dx$

(40)  $\int \tan^3(2x) \sec^4(2x) dx$

(41)  $\int \sec^5 x dx$

(42)  $\int (\cos^2 x)(\cot x) dx$

(43)  $\int (\tan^6 x - \tan^2 x) dx$

(44)  $\int \frac{\cos^3 x}{\operatorname{sen}^2 x} dx$

(45)  $\int (2 - \sqrt{\tan x})^2 \sec^2 x dx$

$$(46) \int (\tan x + \cot x)^2 dx$$

$$(47) \int \frac{\operatorname{sen}^3 \sqrt{t} \cos^2 \sqrt{t}}{\sqrt{t}} dt$$

$$(48) \int x \operatorname{sen}^3(x^2) dx$$

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

$$(50) \int \frac{1}{\sqrt{x^2-36}} dx$$

$$(51) \int x \sqrt{x^2+7} dx$$

$$(52) \int x^3 \sqrt{1-x^2} dx$$

$$(53) \int \frac{1}{(x^2-4)^{3/2}} dx$$

$$(54) \int \frac{1}{x \sqrt{16-x^2}} dx$$

$$(55) \int \frac{1}{(1+x^2)^2} dx$$

$$(56) \int \frac{x^2}{x^2+16} dx$$

$$(57) \int \frac{1}{x^2 \sqrt{16-x^2}} dx$$

$$(58) \int \frac{x^2}{(x^2-1)^2} dx$$

$$(59) \int \sqrt{6x-x^2} dx$$

$$(60) \int \frac{1}{4+(x-3)^2} dx$$

$$(61) \int \frac{1}{\sqrt{x^2+2x+10}} dx$$

$$(62) \int \frac{2x+4}{x^2+4x+13} dx$$

$$(63) \int \frac{1}{(x^2+6x+13)^2} dx$$

$$(64) \int \frac{x}{x^2+25} dx$$

$$(65) \int \frac{x}{\sqrt{4x-x^2}} dx$$

$$(66) \int \frac{\sqrt{4-9x^2}}{x} dx$$

**II.-** Calcular las siguientes integrales definidas:

$$(1) \int_{-(e^e)}^{-1} \frac{6}{x} dx$$

$$(2) \int_2^{e+1} \frac{1}{x-1} dx$$

$$(3) \int_2^3 \frac{x}{(x-1)^6} dx$$

$$(4) \int_0^1 x \sqrt{5x+4} dx$$

$$(5) \int_{-\sqrt{3}}^0 \frac{2x^3}{\sqrt{x^2+1}} dx$$

$$(6) \int_0^4 \frac{1}{(1+\sqrt{x})^3} dx$$

$$(7) \int_1^2 x \ln(2x) dx$$

$$(8) \int_0^1 \ln(x^2+1) dx$$

$$(9) \int_1^e 3x \ln x^2 dx$$

$$(10) \int_{-\pi}^{\pi} e^x \cos x dx$$

$$(11) \int_0^{\ln 2} x^2 e^{3x} dx$$

$$(12) \int_0^1 \arctan x dx$$

$$(13) \int_{\frac{\pi}{3}}^{\frac{\pi}{2}} \operatorname{sen}^3 t \sqrt{\cos t} dt$$

$$(14) \int_0^{\pi} \operatorname{sen}^3 2x dx$$

$$(15) \int_0^{\frac{\pi}{4}} \tan x \sec^4 x dx$$

$$(16) \int_{-1}^1 \sqrt{4-x^2} dx$$

$$(17) \int_{\sqrt{2}}^2 \frac{1}{x^3 \sqrt{x^2-1}} dx$$

$$(18) \int_0^{\frac{1}{2}} x^3 (1+x^2)^{-\frac{1}{2}} dx$$