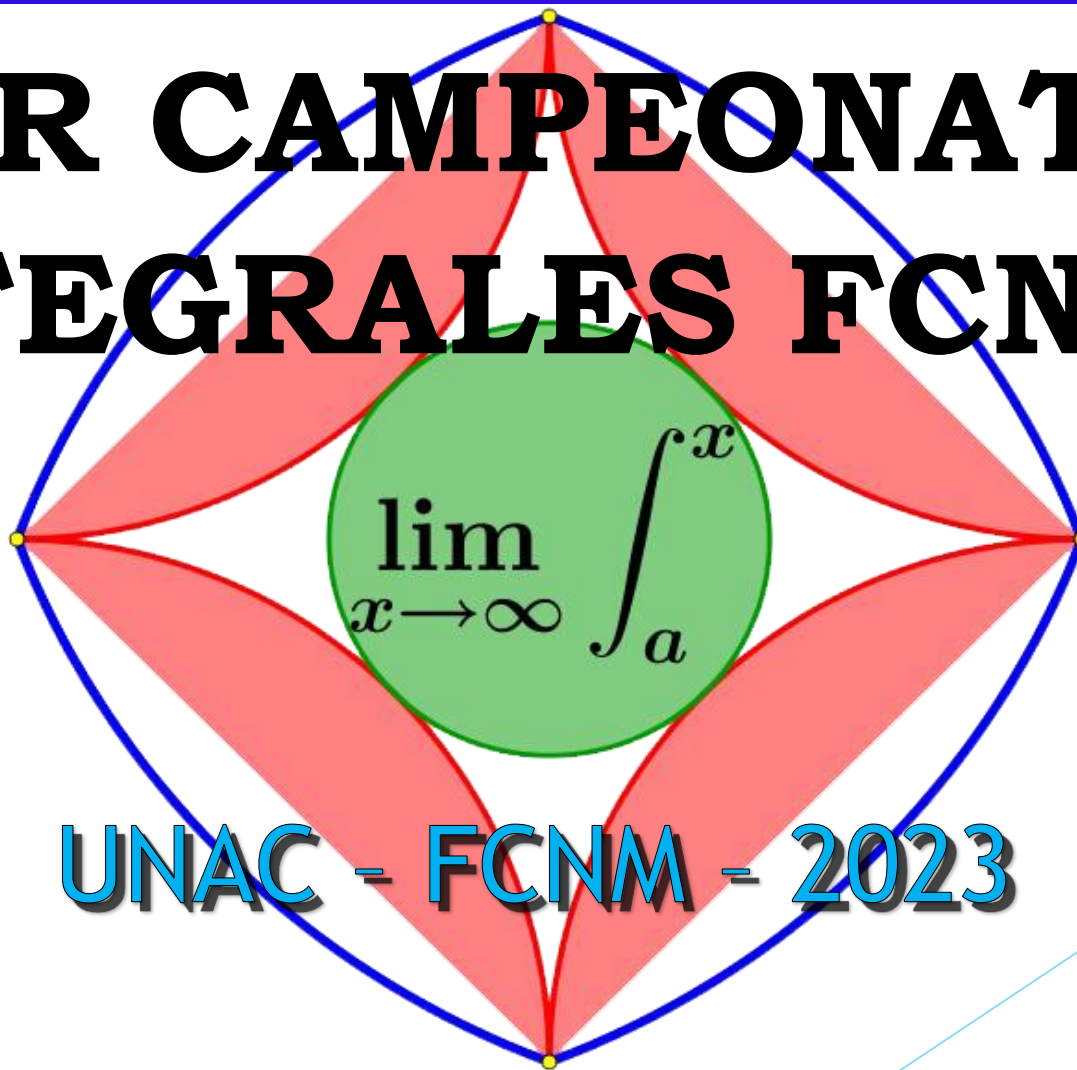


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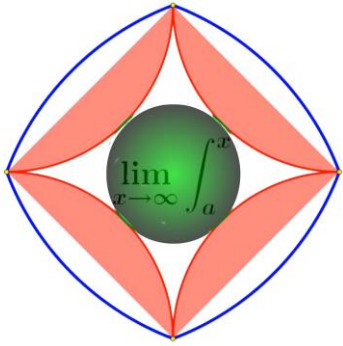
PRIMER CAMPEONATO DE INTEGRALES FCNM



UNAC - FCNM - 2023

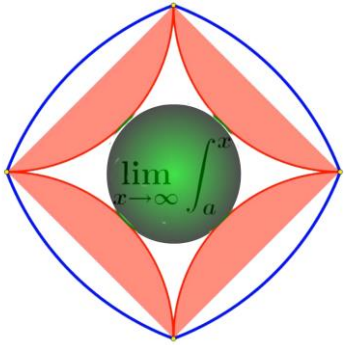


Presentado: Mg. Isaac Flores Ostos



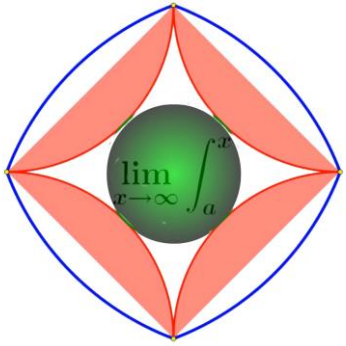
Ejercicio 1

$$I_1 = \int \frac{1}{x + \frac{x^2}{2} + \frac{x^3}{6} + \frac{x^4}{24} + \dots} dx$$



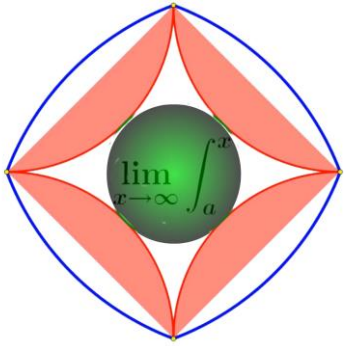
Ejercicio 2

$$I_2 = \int x\sqrt{x+2} dx$$



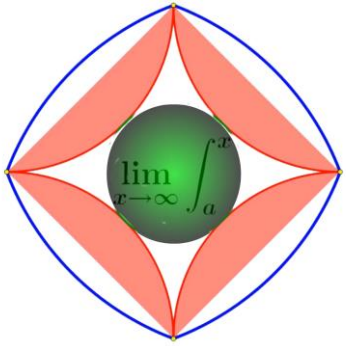
Ejercicio 3

$$I_3 = \int \frac{1}{2 + e^x + e^{-x}} dx$$



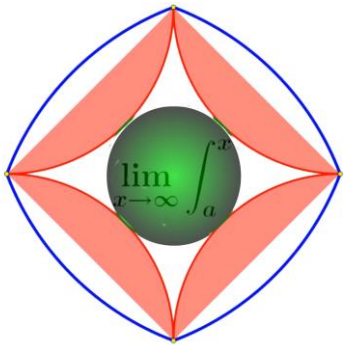
Ejercicio 4

$$I_4 = \int \frac{x^2}{\sqrt{x+3}} dx$$



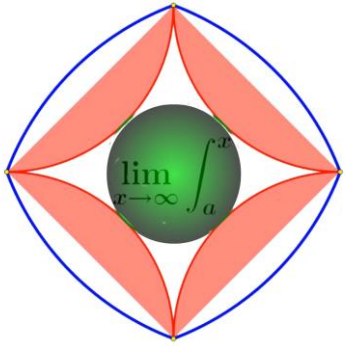
Ejercicio 5

$$I_5 = \int \frac{1 + 2x^{2023}}{x + x^{2024}} dx$$



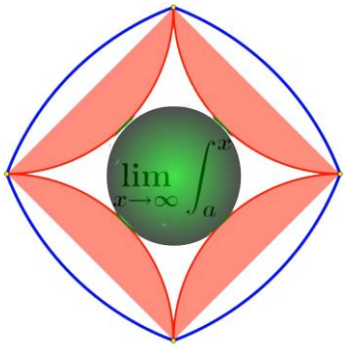
Ejercicio 6

$$I_6 = \int \frac{\pi^x}{(1 + \pi^x) \ln(1 + \pi^x)} dx$$



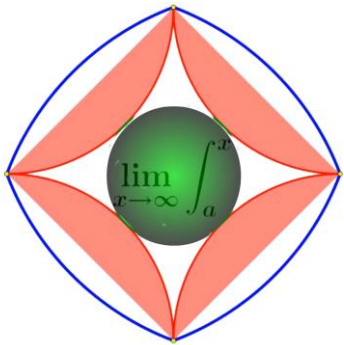
Ejercicio 7

$$I_7 = \int_0^1 \sqrt{x + \sqrt{x + \sqrt{x + \cdots}}} dx$$



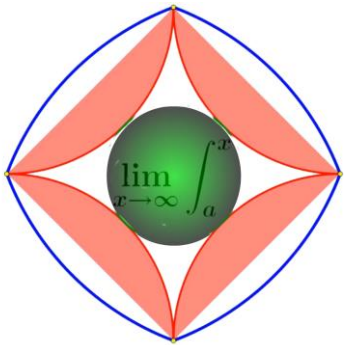
Ejercicio 8

$$I_8 = \int \frac{x^{-7/12}}{\sqrt[3]{x} + \sqrt[4]{x}} dx$$



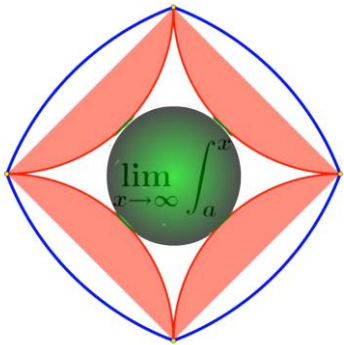
Ejercicio 9

$$I_9 = \int_{\ln\left(\frac{\pi}{6}\right)}^{\ln\left(\frac{\pi}{2}\right)} e^x \operatorname{sen}^2(e^x) \cos(e^x) dx$$



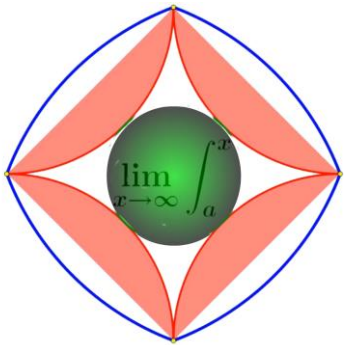
Ejercicio 10

$$I_{10} = \int_0^{\frac{\pi}{4}} (\tan^{2024}(x) + \tan^{2022}(x)) dx$$



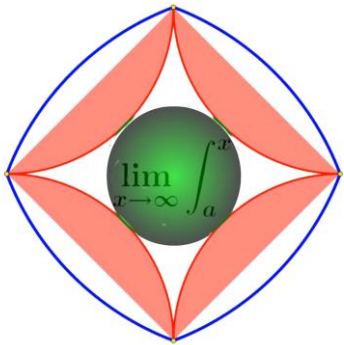
Ejercicio 11

$$I_{11} = \int_0^{\frac{\pi}{4}} \frac{\operatorname{sen}(x)\cos(x)}{\sqrt[3]{\cos^2(x) - \operatorname{sen}^2(x)}} dx$$



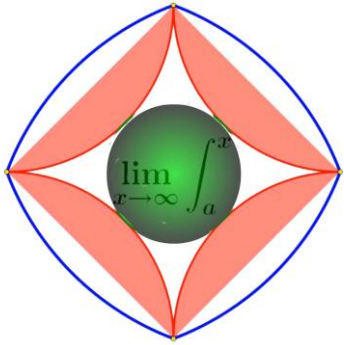
Ejercicio 12

$$I_{12} = \int \frac{(1 + \tan(x))^2}{\tan^2 x - 1} \sqrt[3]{\ln(\text{sen}(x) - \cos(x))} dx$$



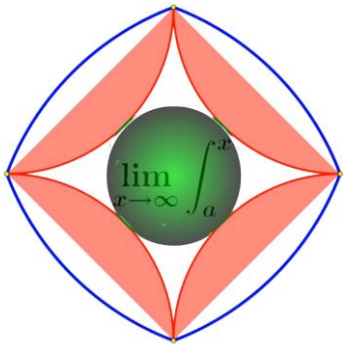
Ejercicio 13

$$I_{13} = \int \left(\frac{1}{x-1} + \frac{\sum_{k=0}^{2022} (k+1)x^k}{\sum_0^{2023} x^k} \right) dx$$



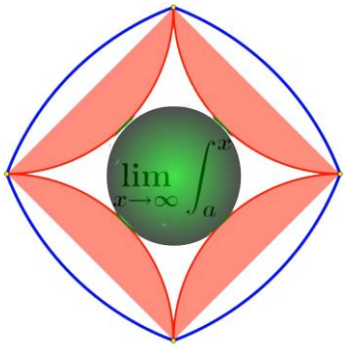
Ejercicio 14

$$I_{14} = \int_0^1 \sqrt[5]{x \sqrt[4]{x \sqrt[3]{x \sqrt{x}}}} dx$$



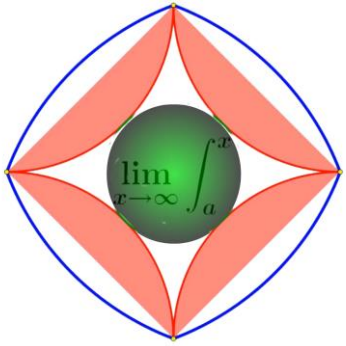
Ejercicio 15

$$I_{15} = \int_0^{\frac{\pi}{3}} (\cosh^2(x) - \sinh^2(x) + \tan^2(2x) + \sec^2(2x)) dx$$



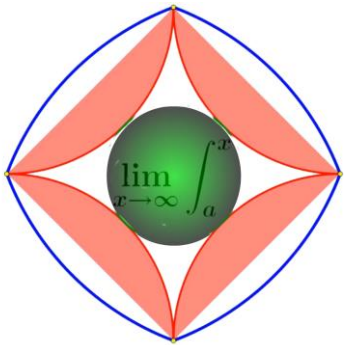
Ejercicio 16

$$I_{16} = \int (2x^3 + 2x \operatorname{sen}(x) + x^2 \cos(x) + \operatorname{sen}(x) \cos(x)) dx$$



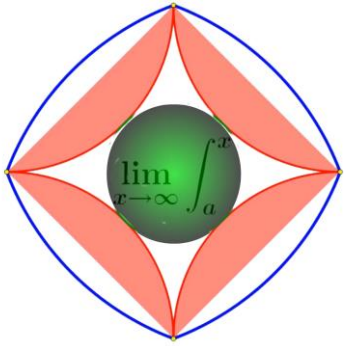
Ejercicio 17

$$I_{17} = \int \left((1-x)^3 + (x-x^2)^3 + (x^2-1)^3 - 3(1-x)(x^2-1)(x-x^2) \right) dx$$



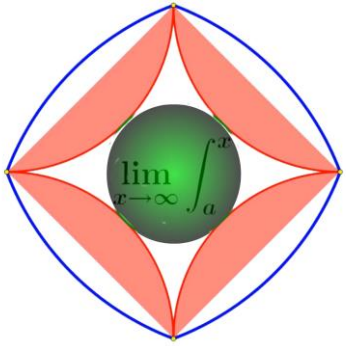
Ejercicio 18

$$I_{18} = \int \frac{dx}{\sqrt{1+x^2} \sqrt{1+x^2 + \arctan(x)} + x^2 \arctan(x)}$$



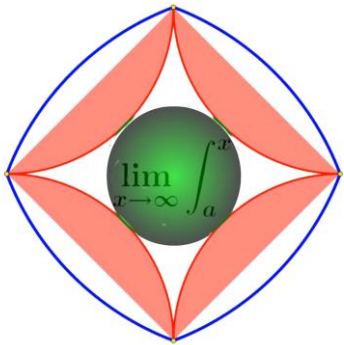
Ejercicio 19

$$I_{19} = \int \frac{\ln(kx)}{x \ln(x)} dx, k \in \mathbb{Z}^+$$



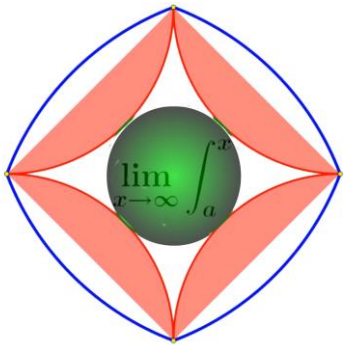
Ejercicio 20

$$I_{20} = \int_e^{e^e} \frac{\ln(x) \ln(\ln(x))}{x} dx$$



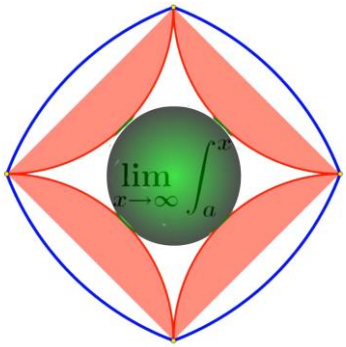
Ejercicio 21

$$I_{21} = \int_0^1 \frac{2x + 1}{2x^2 + 2x + 1} dx$$



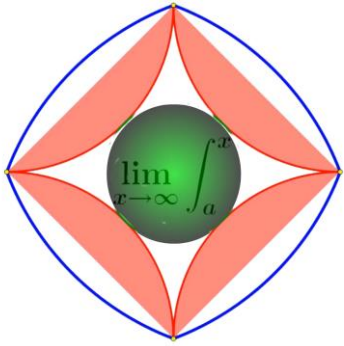
Ejercicio 22

$$I_{22} = \int \frac{1 + \tan(x)}{\text{sen}(2x)} dx$$



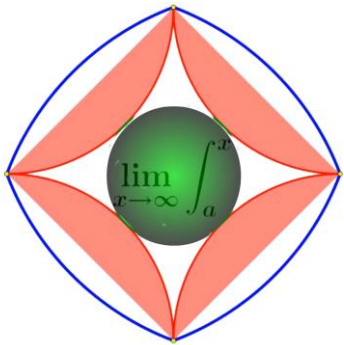
Ejercicio 23

$$I_{23} = \int_0^{\frac{\pi}{12}} (\csc(2x) - \cot(2x)) \tan\left(\frac{\pi}{3} - x\right) \tan\left(\frac{\pi}{3} + x\right) dx$$



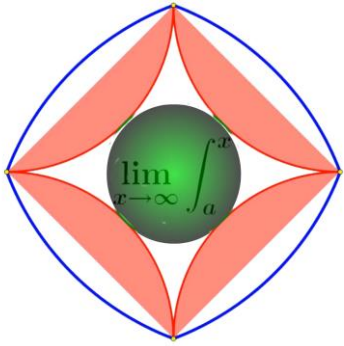
Ejercicio 24

$$I_{24} = \int_0^{\frac{\pi}{2}} \frac{1}{\tan^{\sqrt{2023}}(x) + 1} dx$$



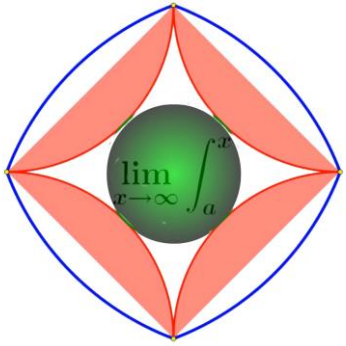
Ejercicio 25

$$I_{25} = \int_0^{\infty} \frac{1}{e^x + 1} dx$$



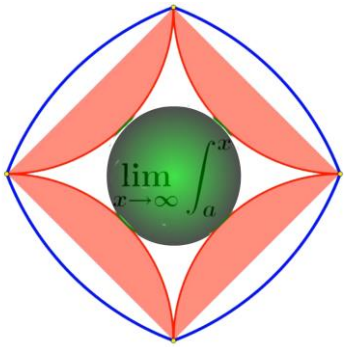
Ejercicio 26

$$I_{26} = \int \ln(x^2 + 1) dx$$



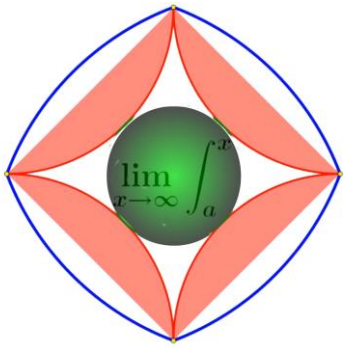
Ejercicio 27

$$I_{27} = \int_0^e \frac{x}{\sqrt{1 - \ln(x)}} dx$$



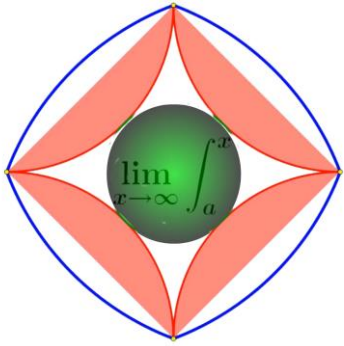
Ejercicio 28

$$I_{28} = \int \frac{\ln(x + x^2 + x^3 + \dots)}{x - x^2} dx$$



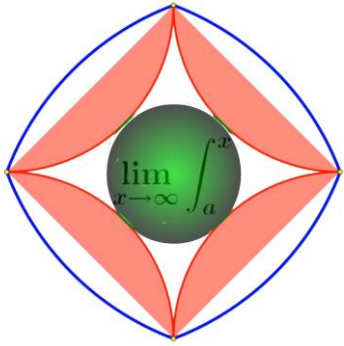
Ejercicio 29

$$I_{29} = \int_0^1 (x \ln(x))^4 dx$$



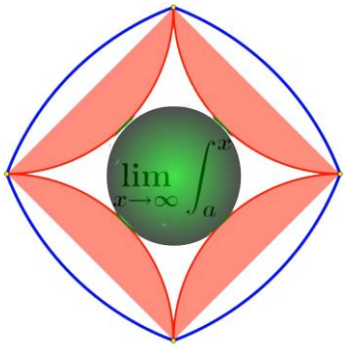
Ejercicio 30

$$I_{30} = \int x^{x + \sqrt{x\sqrt{x\sqrt{x\dots}}}} (\ln(x) + 1) dx$$



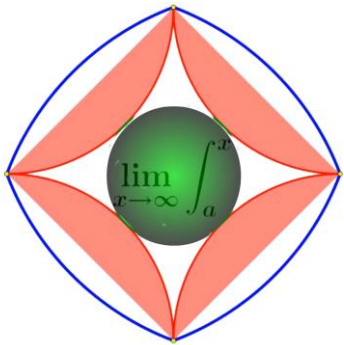
Ejercicio 31

$$I_{31} = \int \operatorname{sen}^p(x) \cos^p(x) (\cos(x) + \operatorname{sen}(x)) (\cos(x) - \operatorname{sen}(x)) dx$$
$$p \in \mathbb{Z}^+$$



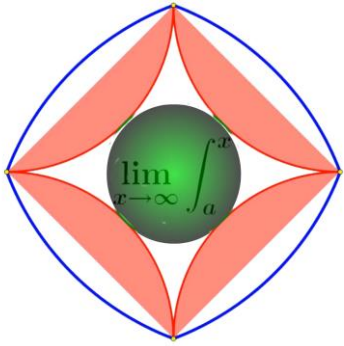
Ejercicio 32

$$I_{32} = \int \frac{\text{sen}(x)}{\cos(x) + \text{sen}(x)} dx$$



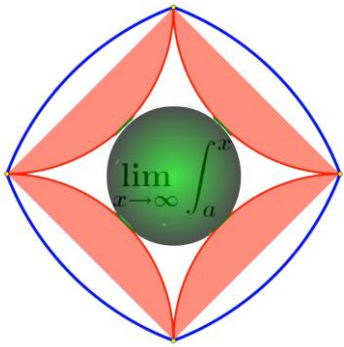
Ejercicio 33

$$I_{33} = \int \left(1 + x + \frac{x^2}{2} + \frac{x^3}{6} + \frac{x^4}{24} + \dots \right) \text{sen}(e^{\sqrt{x\sqrt{x\sqrt{x\dots}}}}) dx$$



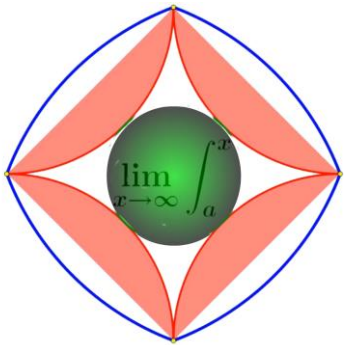
Ejercicio 34

$$I_{34} = \int \frac{x^3 - \sqrt[3]{x^9(x+1)^2}}{\sqrt{x+1}} \csc^2 \left(\tan^{-1} \left(\frac{\sqrt{1 - \sqrt[3]{x+1}^2}}{\sqrt[3]{x+1}} \right) \right) dx$$



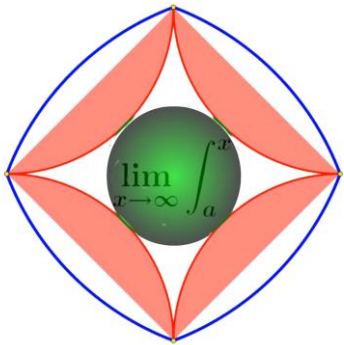
Ejercicio 35

$$I_{35} = \int \frac{\ln(e^{e^x})}{(e^{2x} - 1)(e^x + 2)} dx$$



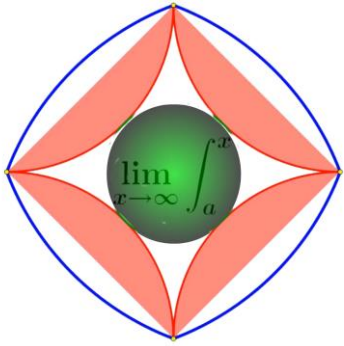
Ejercicio 36

$$I_{36} = \int \frac{x e^x}{(x + 1)^2} dx$$



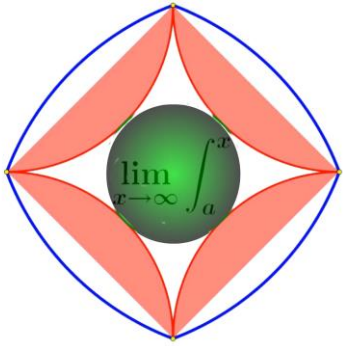
Ejercicio 37

$$I_{37} = \int_0^{\frac{1}{3}} (1 + 2x + 3x^2 + 4x^3 + \dots) dx$$



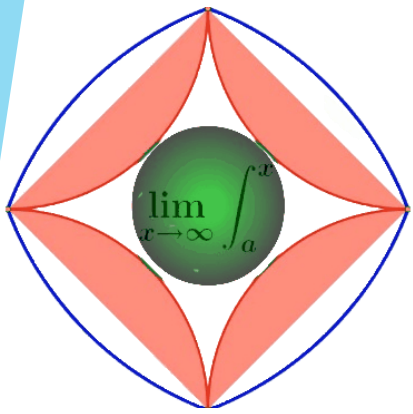
Ejercicio 38

$$I_{38} = \int (e^{x+e^x} + e^{x-e^x}) dx$$



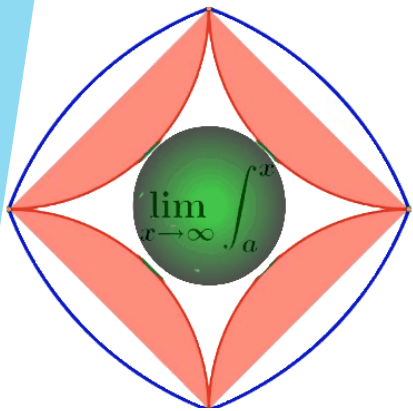
Ejercicio 39

$$I_{39} = \int_e^{e^e} \frac{\ln(x) \ln(\ln(x))}{x} dx$$



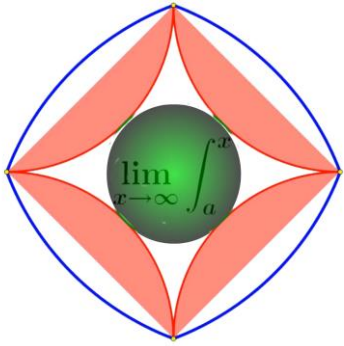
Ejercicio 40

$$I_{40} = \int x^{1+\frac{1}{3}+\frac{1}{12}+\frac{1}{60}+\dots} \cdot \sqrt{x \sqrt{x \sqrt{x \dots}}} dx$$



Ejercicio 41

$$I_{41} = \int_0^{2023\pi} |\text{sen}(2023x)| dx$$



**GRACIAS POR SU
PARTICIPACIÓN**