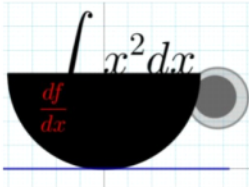# Día 4

Petit-dejéuner #4

Senos y cosenos con regla dela cadena.

(i) $\int 4\sin(4x)\,dx$ (ii) $\int \cos(-x+1)\,dx$ (iii) $\int x^2 sen(x^3)\,dx$

(iv) $\int \dfrac{\cos(2x)}{2} + \dfrac{\sin(3x)}{3}\,dx$ (v) $\int \dfrac{\cos x}{senx}\,dx = \int \cotg(x)\,dx$ (vi) $\int senx\cos^3 x \cdot dx$

PARA RECORDAR

$$\int u'(x)\, sen\, u(x)\,dx = -\cos u(x)$$

$$\int u'(x)\cos u(x)\,dx = sen\, u(x)$$

(i) $\int 4\,sen(4x)\,dx = \begin{cases} u(x) = 4x \\ u'(x) = 4 \end{cases} = -\cos 4x + k$

(ii) $\int \cos(-x+1)\,dx = \begin{cases} u(x) = -x+1 \\ u'(x) = -1 \end{cases} = \int(-1)(-1)\cos(-x+1)\,dx =$

$= -\int -\cos(-x+1)\,dx = -sen(-x+1)$

(iii) $\int x^2\, sen\, x^3\,dx = \begin{cases} u(x) = x^3 \\ u'(x) = 3x^2 \end{cases} = \int \dfrac{1}{3}\, 3x^2\, sen\, x^3\,dx =$

$$= \frac{1}{3} \int 3x^2 \, \text{sen} \, x^3 \, dx = -\frac{1}{3} \cos x^3 + k$$

(iv) $\int \dfrac{\cos 2x}{2} + \dfrac{\text{sen} \, 3x}{3} \, dx = \dfrac{1}{2} \int \cos 2x \, dx + \dfrac{1}{3} \int \text{sen} \, 3x \, dx =$

$$= \frac{1}{2} \cdot \frac{1}{2} \int 2 \cos 2x \, dx + \frac{1}{3} \cdot \frac{1}{3} \int 3 \, \text{sen} \, 3x \, dx = \frac{1}{4} \, \text{sen} \, 2x - \frac{1}{9} \cos 3x + k$$

(v) $\int \dfrac{\cos x}{\text{sen} \, x} \, dx = \left[\int \dfrac{u'(x)}{u(x)} \, dx \right] = \ln (\text{sen} \, x) + k$

(vi) $\int \text{sen} \, x \, \cos^3 x \, dx = -\dfrac{\cos^4 x}{4} + k$