Corto #11 Cálculo Multivariable (15 min)

Nombre: Sección A. **Carnet:** ______________

1. $$\int_0^1\int_0^2 5x(y+x^2)^4\,dy\,dx = \int_0^1 x(y+x^2)^5\Big]_{y=0}^{y=2}\,dx$$

$$= \int_0^1 x(2+x^2)^5 - x(x^2)^5\,dx.$$

$$= \int_0^1 \underbrace{(2+x^2)}_{u}{}^5\,\underbrace{x\,dx}_{du/2} - \int_0^1 x^{11}\,dx$$

$$= \frac{(2+x^2)^6}{12}\Big]_{x=0}^{x=1} - \frac{1}{12}x^{12}\Big]_{x=0}^{x=1}$$

$$= \frac{3^6-2^6}{12} - \frac{1}{12} = \frac{3^6-2^6-1}{12} = \frac{664}{12}$$

$$= \frac{166}{3}$$

+10

en menos de 20 min.

CORTO #11 Cálculo Multivariable (15 min)

Nombre: Sección B. **Carnet:** ______

1. $\displaystyle\int_0^3\int_0^4 4xy\underbrace{\sqrt{y^2+x^2}}_{u}\,\underset{=}{\overset{2y\,dy}{dy}}\,dx = \int_0^3 \frac{4}{3}x\,(y^2+x^2)^{3/2}\Big]_{y=0}^{y=4}\,dx.$

$$I_1 = \int_0^3\left[\frac{4}{3}x\,(16+x^2)^{3/2} - \frac{4}{3}\underbrace{x\cdot(x^2)^{3/2}}_{x^4}\right]dx \qquad x\cdot x^{6/2} = x^4$$

$$I_1 = \frac{2}{3}\int_0^3 (\underbrace{16+x^2}_{u})^{3/2}\,\underbrace{2x\,dx}_{du.} - \frac{4}{3}\int_0^3 x^4\,dx$$

$$I_1 = \frac{2}{3}\cdot\frac{2}{5}\,(16+x^2)^{5/2}\Big]_{x=0}^{x=3} - \frac{4}{15}\,x^5\Big]_{x=0}^{x=3.}$$

$$I_1 = \frac{4}{15}\underbrace{(25)^{5/2}}_{3,125} - \frac{4}{15.}\underbrace{(16)^{5/2}}_{1024} - \frac{4}{15}3^5 + 0. \qquad 100\text{ pts}$$

$$I_1 = \frac{12,500}{15} - \frac{4096}{15} - \frac{972}{15} = \frac{7,432}{15} = \underbrace{495.4666}_{+10}$$