

# EXAMEN FINALLLL

---

Nombre del alumno: Leonardo Daniel  
Morales Jonapa

Nombre del profesor: Juan José Ojeda  
Trujillo

Materia: matemáticas aplicadas

Fecha: 06/07/20

Bachillerato técnico en enfermería

Sexto semestre

# EXAMEN FINAL

06/07/20

$$1. \int \text{SEN}^{-1} 3x^2 dx$$

$$\sqrt{1 - (3x)^2} (x) + x \text{sen}^{-1}(3x) + C$$

$$\frac{\sqrt{1 - 9x^2}}{3} + x \text{sen}^{-1}(3x) + C$$

Factorizando

$$\left( \sqrt{1/3 - 3x^2} + \frac{x}{\text{sen}} 3x + C \right)$$

$$2. \int \text{COS}^{-1} 5x dx$$

$$x \text{cos}^{-1}(5x) - \frac{\ln |(5)^2 (x)^2 + 1|}{2(5)} + C$$

$$= \frac{25x^2 + 1}{10} + C$$

Factorizando

$$\left( \frac{25}{10} x^2 + 1 + C \right)$$

$$3. \int \text{TAN}^{-1} 1/x^2 dx$$

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

$$\frac{\ln |x^2 + 1|}{2} + C$$

Factorizando

$$\left( x^2/2 + 1 + C \right)$$

$$4 - \int \cos^3 2x / 3 dx$$

$$\frac{1}{3} \int \frac{\cos^3 2x}{3} dx = \frac{1}{3} \int \cos^3 2x dx$$
$$= u = 2x$$

$$\frac{1}{3} \int \cos^3 \frac{1}{2} u du$$

$$\frac{1}{3} \cdot \frac{1}{2} \int \cos^2 u \cos u du$$

$$\cos^2 x = 1 - \sin^2 x \quad u = \sin$$

$$\frac{1}{3} \cdot \frac{1}{2} (\sin 2x - \sin^3 2x)$$

$$= \frac{1}{6} \left( \sin 2x - \frac{\sin^3 2x}{3} \right) + C$$

$$5 - \int \sec^4 2x dx$$

$$\frac{1}{2} \int \sec^4(u) du$$

$$\int \sec^4 u du = \int \sin^2(u) \sec^2(u) du$$

$$\frac{1}{2} \int \sec^2 u \sec^2 u du \quad \sec^2 x = 1 + \tan^2 x$$

$$\frac{1}{2} \int 1 + u^2 du = \frac{1}{2} \int 1 du + \int u^2 du$$

$$\int 1 du = u = \int u^2 du = \frac{u^3}{3} = \frac{1}{2} (u + \frac{u^3}{3})$$

$$= \frac{1}{2} \left( \tan 2x + \frac{\tan^3(2x)}{3} \right) + C$$



$$6 - \int \csc^{-1} 2x^2 dx$$

$$\ln \left| 2 \frac{(\sqrt{25x^2 - 1} + 5x)}{5} \right| + \csc^{-1}(5x) + C$$

$$\left( \frac{\sqrt{25x^2 - 4x}}{5} \right) + x \csc^{-1}(5x) + C$$

Factorizando

$$\left) \frac{25/5 x^2 - 4x + x}{\csc(5x)} + C \left($$

$$7 - \int \cot^{-1} \sqrt{2} x dx$$

$$\ln \left| \frac{\sqrt{2} x^2 + 1}{2(\sqrt{2})} \right| + x \cot^{-1}(\sqrt{2}x) + C$$

$$\ln \left| \frac{x^2 + 1}{2} \right| + x \cot^{-1}(x) + C$$

Factorizando

$$\left) \frac{x^2/2 + 1 + x \cot^{-1}(x)}{2} + C \left($$

$$8 - \int \sec^{-1} \sqrt{2} x^2 dx$$

$$\frac{\sqrt{1 - (\sqrt{2})^2 x^2}}{\sqrt{2}} + x \sec^{-1}(\sqrt{2}x) + C$$

$$\frac{1 - x^2}{1} + x \sec^{-1}(x) + C$$

$$\left) \frac{1 - x^2 + x \sec^{-1}(x)}{\sin} + C \left($$

$$9. \int \operatorname{sech} \frac{1}{x^2} dx$$

$$10. \int \operatorname{sech} 2x dx$$

$$2 \operatorname{sech} x \cosh x$$