

**"MATERIA". MSTEMSTICA APLICADA**

**NOMBRE DEL DOCENTE. OJEDA TRUJILLO JUAN JOSE**

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**PRESENTA: EXAMEN**

**ALUMNO: LOPEZ JIMENEZ CITLALI.**

**SEXTO SEMESTRE**

**BACHILLERATO**

**ESCOLARISADO**

$$1. - \int x^2 \operatorname{sen} x \, dx$$

$$u = x^2 \quad du = 2x \, dx$$

$$du = 2x$$

$$x^2 \operatorname{sen} x - \int 2x \cos x \, dx$$

$$u = 2x \quad du = \cos x$$

$$du = 2 \quad v = \operatorname{sen} x \quad -2x \cos x + \int 2 \operatorname{sen} x \, dx$$

$$x^2 \operatorname{sen} x - 2x \cos x + 2 \cos x + c$$

$$R = \boxed{x^2 \operatorname{sen} x - \cos x (2x - 2) + c}$$

$$2. \int x^3 e^{2x} \, dx$$

$$e^2 x^4 - \frac{e^2 x^5}{5} + c \quad \frac{e^2 x^5 + c}{5}$$

$$\int x^4 e^2 \, dx$$

$$e^2 \int x^4 \, dx$$

$$e^2 x \left( \frac{x^5}{5} \right)$$

$$\frac{e^2 x^5}{5}$$

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$$v = x^2 \quad du = 10x$$

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$$4. \int e^{ax} \cos bx \, dx$$

$$-eb \sin cbx - e \cos (bx) + C$$

$$ea \left( \int x \cos (bx) \, dx \right)$$

$$ea \left( \frac{x \sin (bx)}{b} - \frac{\int \sin cbx \, dx}{b} \right)$$

$$5. \int \sin^3 x \, dx$$

$$\frac{3 \sin (x) - \sin (3x)}{4}$$

$$\frac{\cos (3x) - 3 \cos x + C}{12}$$

$$6. \int x^2 \ln x \, dx$$

$$7. \int x^2 \ln x \, dx$$

$$v = x^2 \quad du = 1 \cdot x$$

$$v = \ln x \quad du = x^2$$

$$du = \frac{1}{x} \quad v = \frac{x}{8} \cdot 3$$

$$\frac{\int x^3 \, dx}{3x}$$

$$\frac{1}{3} \int \frac{x^3}{3x} \, dx$$

$$\frac{x^3}{3} \ln x - \int \frac{x^3}{3} \cdot \frac{1}{x} \, dx$$

$$\frac{x^3}{3} \ln x - \frac{1}{3} \int x^2 \, dx$$

$$\frac{x^3}{3} \ln x - \frac{1}{3} \cdot \frac{x^3}{3} + C$$

$$\frac{\frac{x^3}{3} \ln x - \frac{x^3}{9} + C}{1}$$

$$8. \int (x^2 + 2 \cos x) dx$$

$$= \frac{1}{3}x^3 + 2 \sin x + 2x - 2 + C$$