5.3.1 

# Ejercicios

Calcular las siguientes integrales utilizando propiedades y en caso de ser posible usando la regla de Barrow

1. $\int_{-2}^{3} 2x - 1\,dx = \underbrace{\left(2\frac{x^2}{2} - x\right)}_{F(x)}\Big|_{-2}^{3} =$

2. $\int x^2 + 2x + 8\,dx$ $\therefore \left(x^2 - x\right)\Big|_{-2}^{3} =$

3. $\int_{0}^{2\pi} \sin(x) + x\,dx$ $\therefore \left(3^2 - 3\right) - \left(-2^2 - (-2)\right) =$

$\therefore (9-3) - (4+2) =$

4. $\int_{0}^{4} 2e^x + 3x^4\,dx$

$6 - 6 = \boxed{0}$

5. $\int 3\frac{1}{x} + 2e^{x}dx$

6. $\int \cos(x) + \text{sen}(x) + 2x^{3/5}\,dx$

7. $\int_{-5}^{1} x^{2} + 2x + 8\,dx$

8. $\int x - x^{2/5} + 3e^{x} - \cos(x)\,dx$

2. $\int X^{2} + 2X + 8\;dx = \int X^{2}\,dx + \int 2x\,dx + \int 8dx =$

$\therefore \dfrac{X^{3}}{3} + 2\dfrac{X^{2}}{2} + 8X = \dfrac{X^{3}}{3} + X^{2} + 8x + c$

3. $\int_{0}^{2\pi} \sin(x) + x\;dx =$

$\int_{0}^{2\pi} \sin(x)\,dx + \int_{0}^{2\pi} x\;dx =$

$\left(-\cos(x) + \dfrac{X^{2}}{2}\right)\Big|_{0}^{2\pi} =$

$\left(-\cos(2\pi) + \dfrac{2\pi^{2}}{2}\right) - \left(-\cos(0) + \dfrac{0^{2}}{2}\right) =$

$(-1 + \pi^{2}) - (-1 + 0) = (8{,}8696) - (-1) = \boxed{\pi^{2}}$

4. $\int_0^4 2e^x + 3x^4 dx =$

$\left(2e^x + 3\frac{x^5}{5}\right)\Big|_0^4 =$

$\therefore \left(2e^4 + 3\frac{4^5}{5}\right) - \left(2e^0 + 3\frac{0^5}{5}\right) =$

$\therefore 2e^4 + 614,4 - 2 - 0 = \boxed{721,5963}$

5. $\int 3\frac{1}{x} + 2e^x dx =$

$\therefore 3\ln(|x|) + 2e^x + c$

6. $\int \cos(x) + \operatorname{sen}(x) + 2x^{3/5} dx =$

$\therefore \operatorname{sen}(x) - \cos(x) + 2\frac{x^{8/5}}{8/5} + c = \operatorname{sen}(x) - \cos(x) + \frac{10x^{8/5}}{8} + c$

$\therefore = \operatorname{sen}(x) - \cos(x) + \frac{5}{4}x^{8/5} + c$

7. $\int_{-5}^{1} x^2 + 2x + 8 dx =$

$\therefore \left(\frac{x^3}{3} + x^2 + 8x\right)\Big|_{-5}^{1} =$

$\therefore \left(\frac{1}{3} + 1 + 8\right) - \left(\frac{-5^3}{3} + (-5)^2 + 8(-5)\right) =$

$\left(\frac{1}{3} + 9\right) - \left(-41,\hat{6} + 25 - 40\right) = \left(9,\hat{3}\right) - \left(-56,\hat{6}\right) = \boxed{65,\hat{9}} \simeq 66$

8. $\int x - x^{2/5} + 3e^{x} - \cos(x)\, dx =$

$$\therefore \frac{x^2}{2} - \frac{x^{7/5}}{7/5} + 3e^{x} - \operatorname{sen}(x) + c =$$

$$\frac{1}{2}x^2 - \frac{5}{7}x^{7/5} + 3e^{x} - \operatorname{sen}(x) + c$$