INTEGRALES DEFINIDAS

$$\int_a^b f(x)\,dx = F(x)\Big]_a^b = F(b)-F(a)$$ ↓ REGLA DE BARROW

$$\int_1^2 (x^2+2x)\,dx = \frac{x^3}{3}+\frac{2x^2}{2}\Big]_1^2 =$$

$$\left[\left(\frac{8}{3}+4\right)-\left(\frac{1}{3}+1\right)\right] = \frac{8}{3}+4-\frac{1}{3}-1 = \frac{7}{3}+3 = \frac{16}{3}$$

$$\int_0^{\pi} 2\operatorname{sen}(2x)\,dx = \frac{1}{2}(-\cos 2x)\Big|_0^{\pi}$$

$$-\frac{1}{2}\cos(2x)\Big]_0^{\pi} =$$

$$\left[\left(-\frac{1}{2}\cos(2\pi)\right)-\left(-\frac{1}{2}\cos 0\right)\right]$$

($\cos(2\pi)=1$, $\cos 0=1$)

$$-\frac{1}{2}+\frac{1}{2} = 0$$

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(2)

$$f(x)=\begin{cases} 2x+3 & x<0 \quad (-\infty,0) \\ 7 & 0\le x<7 \quad [0,7) \end{cases}$$

a)

$$\int_{-1}^{2} f(x)\,dx = \int_{-1}^{0}(2x+3)\,dx + \int_0^2 7\,dx$$

$$x^2+3x\Big]_{-1}^{0} + 7x\Big]_0^2$$

$$[(0)-(1-3)]+[(14)-(0)]$$

$$2+14 = 16$$

b)

$$\int_2^3 f(x)\,dx = \int_2^3 7\,dx = 7x\Big]_2^3$$

$$21-14 = 7$$

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$$\int_0^2 |x+1|+3\,dx = \int_0^2 x+1+3\,dx$$

$$\int_0^2 x+4\,dx = \frac{x^2}{2}+4x\Big]_0^2$$

$$[(2+8)-(0)] = 10$$

$$\int_{-2}^{2} |x+1|+3\,dx$$

($|x+1| = 0$ en $x=-1$)

-2	$-$	-1	$+$	2

$$\int_{-2}^{-1} -x-1+3\,dx + \int_{-1}^{2} x+1+3\,dx$$

$$\int_{-2}^{-1}(-x+2)\,dx + \int_{-1}^{2}(x+4)\,dx$$

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