

INSTITUTO TECNOLÓGICO  
SUPERIOR DE SAN  
ANDRÉS TUXTLA

Carrera: Ing. en Gestión Empresarial

Asignatura: Cálculo Integral

Tema: Ejercicios  
Desarrollo del Cálculo de Área

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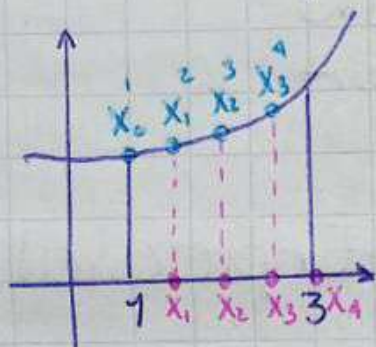
Matrícula: 22100490

Grupo: 207 B

Fecha: 10 de Marzo del 2023

San Andrés Tuxtla, Ver.

Calcular el área por la izquierda y derecha, usando 4 y 8 de la función  $f(x) = \frac{x^2}{2}$



$$n=4$$

$$b=3$$

$$a=1$$

$$\Delta x = \frac{b-a}{n} = \frac{3-1}{4} = \frac{2}{4} = 0.5$$

$$f(x) = \frac{x^2}{2} \quad A = \Delta x \cdot f(x)$$

$$\rightarrow 3.375 < A_r < 5.375 \leftarrow$$

Por la derecha:

$$x_1 = 1.5 \quad x_2 = 2 \quad x_3 = 2.5 \quad x_4 = 3$$

$$f(x_1) = \frac{(1.5)^2}{2} = 1.125$$

$$A_{r1} = (0.5)(1.125) = 0.5625$$

$$f(x_2) = \frac{(2)^2}{2} = 2$$

$$A_{r2} = (0.5)(2) = 1$$

$$f(x_3) = \frac{(2.5)^2}{2} = 3.125$$

$$A_{r3} = (0.5)(3.125) = 1.5625$$

$$f(x_4) = \frac{(3)^2}{2} = 4.5$$

$$A_{r4} = (0.5)(4.5) = 2.25$$

$$A_T = A_{r1} + A_{r2} + A_{r3} + A_{r4} = 5.375 \text{ u}^2 *$$

Por la izquierda:

$$x_0 = 1 \quad x_1 = 1.5 \quad x_2 = 2 \quad x_3 = 2.5$$

$$f(x_0) = \frac{(1)^2}{2} = 0.5$$

$$A_{r0} = (0.5)(0.5) = 0.25$$

$$f(x_1) = \frac{(1.5)^2}{2} = 1.125$$

$$A_{r1} = (0.5)(1.125) = 0.5625$$

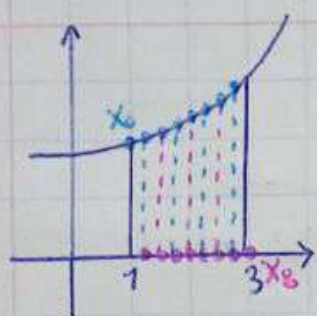
$$f(x_2) = \frac{(2)^2}{2} = 2$$

$$A_{r2} = (0.5)(2) = 1$$

$$f(x_3) = \frac{(2.5)^2}{2} = 3.125$$

$$A_{r3} = (0.5)(3.125) = 1.5625$$

$$A_T = 3.375 \text{ u}^2 *$$



$$n=8$$

$$b=3$$

$$a=1$$

$$\Delta x = \frac{b-a}{n} = \frac{3-1}{8} = \frac{2}{8} = 0.25$$

$$f(x) = \frac{x^2}{2}$$

$$A = \Delta x \cdot f(x)$$

Por la derecha

$$x_1 = 1.25$$

$$x_2 = 1.5$$

$$x_3 = 1.75$$

$$x_4 = 2$$

$$x_5 = 2.25$$

$$x_6 = 2.5$$

$$x_7 = 2.75$$

$$x_8 = 3$$

$$f(x_1) = \frac{(1.25)^2}{2} = 0.78125$$

$$Ar_1 = (0.25)(0.78125) = 0.1953125$$

$$f(x_2) = \frac{(1.5)^2}{2} = 1.125$$

$$Ar_2 = (0.25)(1.125) = 0.28125$$

$$f(x_3) = \frac{(1.75)^2}{2} = 1.53125$$

$$Ar_3 = (0.25)(1.53125) = 0.3828125$$

$$f(x_4) = \frac{(2)^2}{2} = 2$$

$$Ar_4 = (0.25)(2) = 0.5$$

$$f(x_5) = \frac{(2.25)^2}{2} = 2.53125$$

$$Ar_5 = (0.25)(2.53125) = 0.6328125$$

$$f(x_6) = \frac{(2.5)^2}{2} = 3.125$$

$$Ar_6 = (0.25)(3.125) = 0.78125$$

$$f(x_7) = \frac{(2.75)^2}{2} = 3.78125$$

$$Ar_7 = (0.25)(3.78125) = 0.9453125$$

$$f(x_8) = \frac{(3)^2}{2} = 4.5$$

$$Ar_8 = (0.25)(4.5) = 1.125$$

$$A_T = 4.84375 \text{ u}^2$$

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Por la izquierda:

$$X_0 = 1$$

$$X_1 = 1.25$$

$$X_2 = 1.5$$

$$X_3 = 1.75$$

$$X_4 = 2$$

$$X_5 = 2.25$$

$$X_6 = 2.5$$

$$X_7 = 2.75$$

$$f(X_0) = \frac{(1)^2}{2} = 0.5$$

$$Ar_0 = (0.25)(0.5) = 0.125$$

$$f(X_1) = \frac{(1.25)^2}{2} = 0.78125$$

$$Ar_1 = (0.25)(0.78125) = 0.1953125$$

$$f(X_2) = \frac{(1.5)^2}{2} = 1.125$$

$$Ar_2 = (0.25)(1.125) = 0.28125$$

$$f(X_3) = \frac{(1.75)^2}{2} = 1.53125$$

$$Ar_3 = (0.25)(1.53125) = 0.3828125$$

$$f(X_4) = \frac{(2)^2}{2} = 2$$

$$Ar_4 = (0.25)(2) = 0.5$$

$$f(X_5) = \frac{(2.25)^2}{2} = 2.53125$$

$$Ar_5 = (0.25)(2.53125) = 0.6328125$$

$$f(X_6) = \frac{(2.5)^2}{2} = 3.125$$

$$Ar_6 = (0.25)(3.125) = 0.78125$$

$$f(X_7) = \frac{(2.75)^2}{2} = 3.78125$$

$$Ar_7 = (0.25)(3.78125) = 0.9453125$$

$$Ar = 3.84375$$

$$\rightarrow 3.84375 \text{ u}^2 < A_v < 4.84375 \text{ u}^2 \leftarrow$$