

Derivadas

$$\textcircled{1} f(x) = x^5 - 2x^3 + 4x^2$$

$$\underline{\underline{f'(x) = 5x^4 - 6x^2 + 8x}}$$

$$\textcircled{2} f(x) = (5)(x^4 - 3x^3)^2$$

$$u(x) \cdot v(x)$$

$$\therefore u(x) \cdot v' + v(x) \cdot u'$$

Sacando v' :

$$u = 5$$

$$\frac{d}{dx} u^n = nu^{n-1} \cdot u'$$

$$v = (x^4 - 3x^3)^2$$

$$u = (x^4 - 3x^3)$$

$$u' = 0$$

$$n = 2$$

$$v' = 8x^7 - 42x^6 + 54x^5$$

$$u' = 4x^3 - 9x^2$$

$$2(x^4 - 3x^3)(4x^3 - 9x^2)$$

$$(2x^4 - 6x^3)(4x^3 - 9x^2)$$

$$8x^7 - 18x^6 - 24x^6 + 54x^5$$

$$\rightarrow 8x^7 - 42x^6 + 54x^5$$

$$= (5)(8x^7 - 42x^6 + 54x^5) + \cancel{(x^4 - 3x^3)^2 \cdot 0}$$

$$\underline{\underline{= 40x^7 - 210x^6 + 270x^5}}$$

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$$f(x) = (12x)(3x-2)^5 = u(x) \cdot v(x)$$

Sacando $v' =$

$$f(x) = (3x-2)^5$$

$$\frac{d}{dx} u^n = nu^{n-1} \cdot u'$$

$$u = 3x - 2$$

$$n = 5$$

$$u' = 3$$

$$f'(x) = 5(3x-2)^{5-1} \cdot 3$$

$$f'(x) = 5(3x-2)^4 \cdot 3$$

$$= 15(3x-2)^4$$

$$u(x) \cdot v' + v(x) \cdot u'$$

$$u = 12x$$

$$v = (3x-2)^5$$

$$u' = 12$$

$$v' = 15(3x-2)^4$$

$$= 12x \cdot [15(3x-2)^4] + (3x-2)^5 \cdot 12$$

$$= \underline{\underline{12x[15(3x-2)^4] + (3x-2)^5 \cdot 12}}$$

Integrales

$$\begin{aligned} \textcircled{1} \int (26x^3 + 20x^2 + 25x - 5x) dx \\ &= 26 \int x^3 dx + 20 \int x^2 dx + 20 \int x dx \\ &= \frac{26x^4}{4} + \frac{20x^3}{3} + \frac{20x^2}{2} + C \\ &= \frac{13x^4}{2} + \frac{20x^3}{3} + 10x^2 + C \end{aligned}$$

$$\textcircled{2} \int (2x+10)^3 \quad \text{POR SUSTITUCIÓN}$$

$$u = 2x + 10$$

$$du = 2dx$$

$$\frac{du}{2} = dx$$

$$\int \frac{u^3 du}{2} = \frac{1}{2} \int u^3 du \quad \int x^n dx = \frac{x^{n+1}}{n+1} + C \quad \text{fórmula}$$

$$= \frac{1}{2} \left(\frac{u^4}{4} \right) + C = \frac{u^4}{8} + C$$

$$= \frac{1}{8} (2x+10)^4 + C$$

$$\textcircled{3} \int (13-10)^4 dx$$

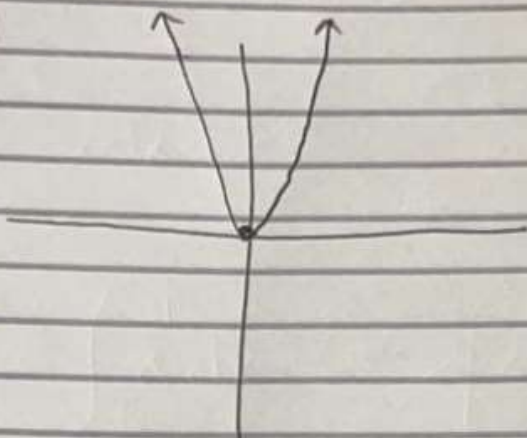
$$= (3)^4 = \int 81 dx$$

$$= 81 \int dx + C$$

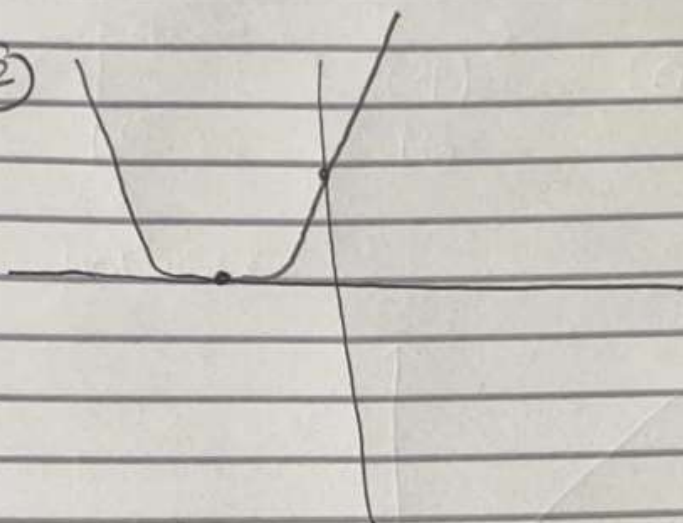
$$= \underline{\underline{81x + C}}$$

gráfica de integrales

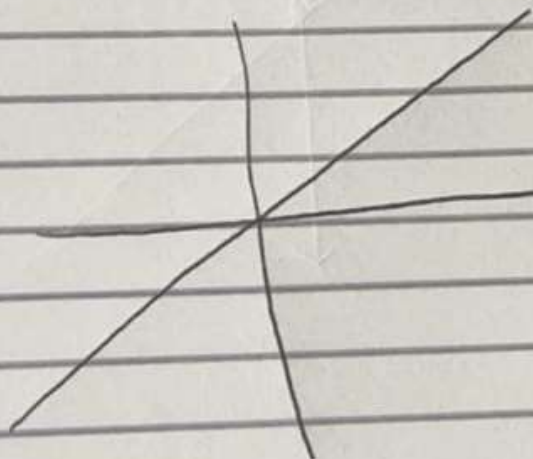
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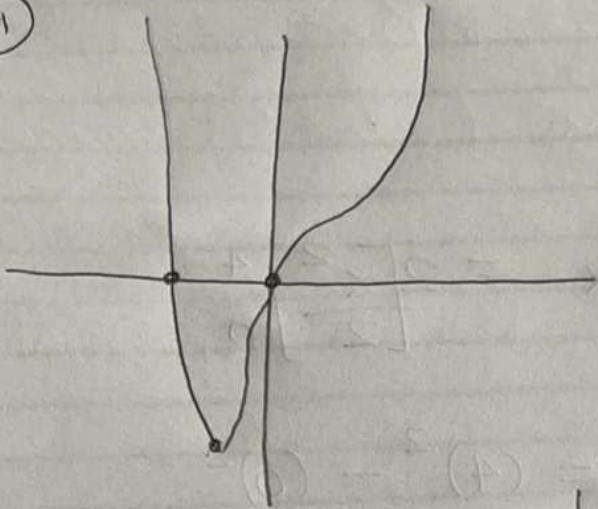


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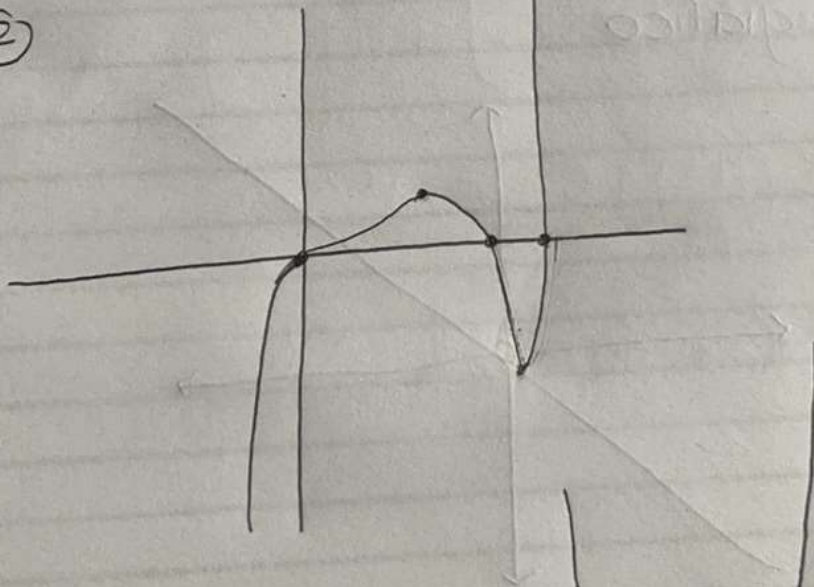


gráfica de derivadas

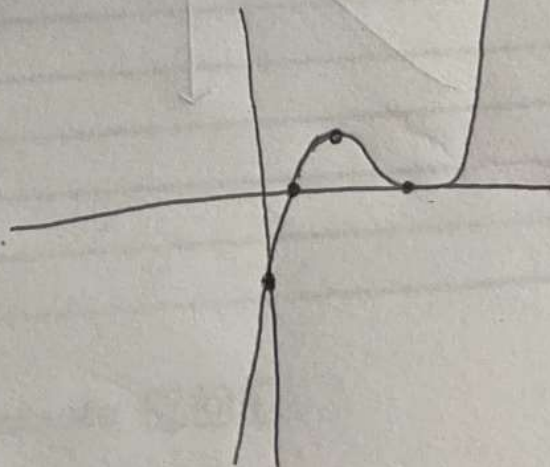
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Integral definido

$$\int_0^4 2x dx$$

$$= 2 \int_0^4 x dx = 2 \left[\frac{x^2}{2} \right]_0^4$$

$$= x^2 \Big|_0^4 = (4)^2 - (0)^2 = 16$$

gráfico

