DIA MES AÑO
18 10 21

Derivada

$y = 4x^2 + 6x - 10$

$y = 4x^3 + 6x - 10$

$\frac{d}{dx} Cn^n = nCx^{n-1}$

$\frac{d}{dx} Cx = C$

$\frac{d}{dx} C = 0$

$y' = 12x^2 + 6$

$y = 5x^4 + 8x + 3$

$y' = 20x^3 + 8$

$y = 5x^2 + ax + 6$

$y' = 10x + a$

$y = \frac{4}{3}x^{\frac{3}{5}} + \frac{1}{2}x + \sqrt{6}b^2$

$y' = \frac{12}{15}x^{-\frac{2}{5}} + \frac{1}{2}$

$y' = \frac{4}{5}x^{-\frac{2}{5}} + \frac{1}{2}$

$y' = \frac{4}{5x^{\frac{2}{5}}} + \frac{1}{2}$

$y = \frac{5}{2}x^{\frac{8}{3}} + \frac{4}{5}x + \sqrt{4}h^2$

$y' = \frac{20}{3}x^{\frac{5}{3}} + \frac{4}{5}$

$$\frac{d}{dx}(u \cdot v) = (u * \frac{d}{dx} v) + (v * \frac{d}{dx} u)$$

$$\frac{d(\frac{u}{v})}{dx} = \frac{(v * \frac{d}{dx} u) - (u * \frac{d}{dx} v)}{v^2}$$

$$\frac{d}{dx}(v)^n = nv^{n-1} * \frac{dv}{dx}$$

$y = (2x+3)(4x^2-2$

$u = 2x+3 \qquad du = 2$
$V = 4x^2-2 \qquad dx = 8x$

$Y = (2x+3)\,8x + (4x^2-2)2$
$Y = 16x^2+24x+8x^2-4 = 24x^2+24x-4$

$y = (4x+5)(6x^2-8)$

$u = 4$
$v = 12x \qquad (4x+5)12x + (6x^2-8)4 =$
$48x^2+60x+24x^2-32 = 72x^2+60x-32$

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$$\frac{d\frac{u}{v}}{dx} = \frac{u\frac{dv}{dx} - v\frac{du}{dx}}{v^2}$$

$$y = \frac{2x^3+4}{x-4} \quad \begin{matrix} \leftarrow u \\ \leftarrow v \end{matrix}$$

$$y' = \frac{(x-4)(6x^2) - (2x^3+4)(1)}{(x-4)^2}$$

$$y' = \frac{(6x^3-24x^2) - (2x^3+4)}{(x-4)^2}$$

$$y' = \frac{4x^3-24x^2-4}{(x-4)^2}$$

$$y = \frac{4x^2+5}{5x-2}$$

$$y' = \frac{8x(5x-2) - 5(4x^2+5)}{(5x-2)^2}$$

$$y' = \frac{(40x^2-16x) - (20x^2-25)}{(5x-2)^2}$$

$$y' = \frac{20x^2-16x-25}{(5x-2)^2}$$

$$\frac{dv^n}{dx} = n(v)^{n-1} * \frac{dv}{dx}$$

$$y = (3x+6)^4$$

$$y = 4(3x+6)^3 * (3)$$

$$y = 12(3x+6)^3$$

$$y = (5x+2)^3$$

$$y = 3(5x+2)^2 * (5)$$

$$y = 15(5x+2)^2$$

Norma

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$(3x+8)^4 = 4(3x+8)^3 * (3) = 12(3x+8)^3$

$(4x+2)(5x-3) = (4x+2)(5) + (5x-3)(4) = 20x+10+20x-12 = 40x-2$

$\frac{2x^2+4}{4x-3} = \frac{(2x^2+4)(4) - (4x-3)(2x)}{(4x-3)^2} = \frac{(8x^2+16) - (8x^2-6x)}{(4x-3)^2} = \frac{+6x+16}{(4x-3)^2}$

$(5x^2-1)^3 = 3(5x^2-1)^2 * (5x) = 15x(5x^2-1)$

$(5x+2)(x-4) = (5x+2)(1) + (x-4)(5) = 10x-18$

$(7x^2-10)^3 = 3(7x^2-10)^2 * (7x) = 21x(7x^2-10)^2$

$\frac{6x^2+3}{2x-5} = \frac{(6x^2+3)(2) - (2x-5)(6x)}{(2x-5)^2} = \frac{(12x^2+6) - (12x^2-30x)}{(2x-5)^2} = \frac{30x+6}{(2x-5)^2}$

Norma

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① $y=(3x-1)(4x^2+2)$
$y'=(3x-1)8x+(4x^2+2)3$
$y'=24x^2-8x+12x^2+6$
$y'=36x^2-8x+6$

② $y=(4x^2-3)(x-3)$
$y'=(4x^2-3)1+(x-3)8x$
$y'=4x^2-3+8x^2-24x$
$y'=12x^2-24x-3$

③ $y=(2x^2-2)(3x-6)$
$y'=(2x^2-2)3+(3x-6)4x$
$y'=6x^2-6+12x^2-24x$
$y'=18x^2-24x-6$

④ $y=(5x^2-3x)(2x-5)$
$y'=(5x^2-3x)2+(2x-5)(10x-3)$
$y'=10x^2-6x+20x^2-6x-50x+15$
$y'=30x^2-6x+15$

⑤ $y=(3x^4-3)^5$
$y'=5(3x^4-3)^4 * 12x^3$

⑥ $y=(2x^4-3x)^2$
$y'=2(2x^4-3x)*(8x^3-3)$

⑦ $y=(4x^2-6)^4$
$y'=4(4x^2-6)^3 * 8x$
$y'=32x(4x^2-6)^3$

⑧ $y=(5x^3-5)^3$
$y=3(5x^3-5)^2*(15x^2)$

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⑨ $y = \frac{2x-3}{3x^2+1}$

$y' = \frac{(2x-3)(6x)+(3x^2+1)(2)}{(3x^2+1)^2}$

$y' = \frac{(12x^2-18x)-(6x^2+8)}{(3x^2+1)^2}$

$y' = 6x^2-18x-8$

⑩ $y = \frac{5x-6}{4x^2-6}$

$y' = \frac{(5x-6)(8x)-(4x^2-6)(5)}{(4x^2-6)^2}$

$y' = \frac{40x^2-48x-20x^2+30}{(4x^2-6)^2}$

$y' = \frac{20x^2-48x+30}{(4x^2-6)^2}$

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Derivada de las funciones trigonométricas

Función	Derivada
$y = \operatorname{sen} u$	$y' = \cos u \cdot u'$
$y = \cos u$	$y' = -\operatorname{sen} u \cdot u'$
$y = \tan u$	$y' = \sec^2 u \cdot u'$
$y = \operatorname{cot} u$	$y' = -\csc^2 u \cdot u'$
$y = \sec u$	$y' = \sec u \tan u \cdot u'$
$y = \csc u$	$y' = -\csc u \operatorname{cot} u \cdot u'$

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Derivadas Trigonométricas

$y = 3 \sen 4x^2$ ← "V"

Constante Función trigonométrica

$y' = 3 \cos 4x^2 * 8x$

$y' = 24x \cos 4x^2$

$y = 5 \tan 2x^3$
$y' = 5 \sec^2 2x^3 * 6x^2$
$y' = 30x^2 \sec^2 2x^3$

$y = 4 \operatorname{ctg} 4x^2$
$y' = -4 \csc^2 4x^2 * 8x$
$y' = -32x \csc^2 4x^2$

$y = 6 \sec 9x^2$
$y' = 6 \tan 9x^2 \sec 9x^2 * 18x$
$y' = 108x \tan 9x^2 \sec 9x^2$