Formulario

24 junio de 23

1. $Y = 2x^3 - 6x^2 - 7x + 11$

$6x^2 - 12x - 7$

2. $Y = 11/4\,x^3 + 7/3\,x^2$

$y' = \frac{33}{4}x^2 + \frac{14}{3}x$

3. $Y = 11 - 2x^2 - 6x^3$

$-4x - 18x^2$

4. $Y = x/(x^2 - 8x)$ $u = x$ $v = x^2 - 8x$

$du = 1$ $dv = 2x - 8$ $y' = (x^2 - 8x)(1) - (x)(2x - 8)$

$v^2 = (x^2 - 8x)^2$ $(x^2 - 8x)^2$

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

5.- $5/3x-4$ $v=5$ $v=3x-4$

$dv=0$ $dv=3$

$y' = \frac{(3x-4)(0)-5(3)}{(3x-4^2)}$ $y' = \frac{-15}{(3x-4)^2}$

6.- $y=(3x+2)/(2x-1)$

$u=3x+2$ $v=2x-1$

$du=2$ $v^2=(2x1)^2$

$y' = 3(2x-1)^2(3x+2)$

$(2x+4) = (2x-1)^2 = 6x-3-6x-4$

$= (2x-1)^2 = -7$

$(2x1)^2$

7.- $y=(3x^2+1)/(2x)$

$y = \frac{3x^2+1}{2x} = \frac{(2x)(6x)-(3x^2+1)(2)}{2x^2} = 12x^2-6x^2+2 = \frac{6x^2-2}{4x^2}$

$= \frac{3}{2} - \frac{1}{2x^2}$

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

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

$du=0$ $dv=2x$

$y' = \frac{10x+(4+x^2)}{(4+x^2)^2} = y' = \frac{x^2+10x-4}{(4+x^2)^2}$

9.- $y=(1+2x)^2$

$y=1+2x$ $y' = 2(1+2x)^2 \cdot (2)$

$n=2$ $y' = 4(1+2x)^2$

$1-n=1$

$dv=2$

10.- $y = \frac{3}{5}x^2 - \frac{3}{4}x + \frac{1}{8}$

$\frac{3}{5}\frac{d}{dx}(x^2) - \frac{3}{4}\frac{d}{dx}(x) + \frac{d}{dx}(1/8)$

$\frac{3}{5}(2)x - \frac{3}{4}(1) = \frac{6}{5}x - \frac{3}{4}$

11.- $2x^2 / TANx^2$

$u = 2x^2 \quad v = TANx^2$

$du = 4x \quad dv = 2x\sec^2 x^2$

$v^2 = (TANx^2)^2$

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

$y' = \frac{4x(TANx^2 - x^2\sec^2 x^2)}{(TANx^2)^2}$

12.- $3x^2 \cos 3x^2$

$u = 3x^2 \quad v = \cos 3x^2$

$du = 6x \quad dv = -6x\,\text{sen}\,3x^2$

$u \cdot dx + v \cdot du \quad 3x^2 \cdot 6x\,\text{sen}\,3x^2$

13.- $\text{sen}\,x^2 \cos x^2 \quad u = \text{sen}\,x^2 \quad v = \cos x^2$

$y = \text{sen}\,x^2 \cdot \cos x^2 \quad du = 2x\cos x^2 \quad dv = -2x\,\text{sen}\,x^2$

$y' = (\text{sen}\,x^2)(-2x\,\text{sen}\,x^2) + (\cos x^2)(2x\cos x^2)$

$y' = (\text{sen}\,x^2)(-2x \cdot x \cdot 1) + \cos x^2 (2x \cdot 1)$.

14.- $\cot 3x^3$

$y' = \csc 3x^3 \cdot \frac{d}{dx}(3x^3)$

$y' = 9x^2 \csc 3x^3$

15.- $y=\sqrt{2x^3\cos x^2}$ $\sqrt{ab}=\sqrt{A}\cdot\sqrt{B}$

$y=2x^3\cos x^2=\sqrt{2x^3}\cdot\sqrt{\cos x^2}$ $u=\sqrt{2x^3}$

$u=(2x^3)^{3/2}$ $v=\sqrt{\cos x^3}$ $v=(\cos x^2)^{\frac{1}{2}}$

$du=3x^{\frac{1}{2}}$ $dv=\frac{1}{2}(\cos x^2)$

$du=3\sqrt{x}$ $\operatorname{sen} x^2$

$y=\sqrt{2x^3}\cdot\frac{x\operatorname{sen}x^2}{\sqrt{\cos x^2}}+3\sqrt{x}$ $dv=\frac{x\operatorname{sen}x^2}{\sqrt{\cos x^2}}$

$y=\sqrt{2x^2}\cdot\frac{x\operatorname{sen}x^2}{\sqrt{\cos x^2}}+3\sqrt{x\cos x^2}$

16.- $\sqrt{2x^3\sec 2x}$

$v=\sqrt{\sec 2x}$

$u=\sqrt{2x^3}$ $v=(\sec 2x)^{\frac{1}{2}}$

$du=3\sqrt{x}$ $dv=\frac{1}{2}(\sec 2x)^{\frac{1}{2}}\cdot 2\sec 2x\tan 2x$

$dv=\frac{\sqrt{\sec 2x\cdot\tan 2x}}{\sqrt{\sec 2x}}$

$y=3\sqrt{x}\,\frac{\sec 2x\cdot\tan 2x}{\sqrt{\sec 2x}}$ $=y=3\sqrt{x}\cdot\frac{\sec 2x\cdot\tan 2x}{\sqrt{\sec x}}+3\sqrt{\sec 2x}$

17.- $2x^3\sqrt{5x^3}$

$u=2x^3$ $v=\sqrt{5x^3}$

$du=6x^2$ $dv=15x^2$ $2(5x)^{\frac{1}{2}}=\frac{15x^2}{2\sqrt{2x^3}}$

$y'=\frac{30x^6}{2\sqrt{5x^2}}+6x^2\sqrt{5x^3}$

18.- $4\sec 2x^4$

$y'=4\sec$ $y'=4\sec 2x^4\tan 2x^4\cdot\frac{d}{dx}(2x^4)$

$y'=48x^3\sec 2x^4\cdot\tan 2x^4$

$y=32x^3\sec x^4\cdot\tan 2x^4$

19. $(\cos 2x^3)^3$ $\quad v = \cos 2x^3$ $\quad n = 3$ $\quad n-1 = 2$

$dv = -6x^2 \operatorname{sen} 2x^3$

$y' = 3(\cos 2x^3)^2 \cdot (-6x^2 \operatorname{sen} 2x^3)$

$y' = -18x^2 (\cos 2x^3)^2 \operatorname{sen} 2x^3$

20. $1/(\operatorname{sen} x^2)^2$

$y = (\operatorname{sen} x^2)^{-2}$

$v^n = n v^{n-1}$ $\quad \frac{dv}{dx}$ $\quad n = -2$ $\quad n-1 = -3$ $\quad v = \operatorname{sen} x^2$ $\quad dv = 2x \cos x^2$

$y' = -2(\operatorname{sen} x^2)$

$y' = \frac{-2(2x \cos x^2)}{(\operatorname{sen} x^2)^3}$ $\qquad y' = \frac{-4x \cos x^2}{(\operatorname{sen} x^2)^3}$