18.- $\sec 2x^4 = \operatorname{Sec} u \cdot \operatorname{Tan} u \dfrac{du}{dx}$ $\quad du = 8x^3$

$(\operatorname{Sec} 2x^4)(\operatorname{Tan} 2x^4)(8x^3)$

$4 \cdot (8x^3 \sec 2x^4)(\tan 2x^4)$

$(32x^3 \operatorname{Sec} 2x^4)(\operatorname{Tan} 2x^4)$

19.- $(\cos 2x^3)^3$ $\quad u^n = n u^{n-1} \dfrac{du}{dx}$

$u = \cos 2x^3$

$du = -\operatorname{sen} 2x^3 \cdot (6x^2)$ $\quad n-1 = 2$

$du = -6x^2 \operatorname{sen} 2x^3$ $\quad n = 3$

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

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

20.- $y = \dfrac{1}{(\operatorname{sen} x^2)^2}$ $\quad u^n = n u^{n-1} \dfrac{du}{dx}$ $\quad y = (\operatorname{sen} x^2)^{-2}$

$n = -2 \quad n-1 = -3$

$u = \operatorname{sen} x^2 \quad du = 2x \cos x^2$

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

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

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

18.- $\sec 2x^4 = \operatorname{Sec} u \cdot \operatorname{Tan} u \, \frac{du}{dx}$ $du = 8x^3$

$(\operatorname{Sec} 2x^4)(\operatorname{Tan} 2x^4)(8x^3)$

$4 \cdot (8x^3 \sec 2x^4)(\tan 2x^4)$

$(32x^3 \sec 2x^4)(\operatorname{Tan} 2x^4)$

19.- $(\cos 2x^3)^3$

Galena

16.- $\sqrt{2x^3 \sec 2x}$ $\quad u^n = nu^{n-1} \cdot \frac{du}{dx}$

$y' = (2x^3 \sec x^2)^{1/2}$ $\quad$ $\overset{u}{2x^3}$ $\overset{v}{\sec x^2}$

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

$(2x^3)(2x \sec x^2 \tan x^2)$

$+ (6x^2)(\sec x^2)$

$6x^2 \sec x^2$

$y' = \left[\frac{1}{2}(2x^3 \sec x^2)^{-1/2}\right] \cdot \left[-1x^4 \sec x^2 \tan x^2 + 6x^2 \sec x^2\right]$

$y' = \dfrac{4x^4 \sec x^2 \tan x^2 + 6x^2 \sec x^2}{2\sqrt{2x^3 \sec x^2}}$

17.- $\underset{u}{2x^3}\underset{v}{\sqrt{5x^3}}$ $\quad u \cdot v = du \cdot v + dv \cdot u$ $\quad u = 2x^3$, $du = 6x^2$

$y' = 6x^2 \cdot (5x^3)^{1/2} + (15x^2)^{1/2} \cdot 2x^3$ $\quad v = (5x^3)^{1/2}$, $dv = (15x^2)^{1/2}$

$y' = 6x^2 \cdot \sqrt{5x^3} + \sqrt{15x^2} \cdot 2x^3$

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

$(\sec 2x^4)$...

$4 \cdot (8x^3 \sec$...

$(32x^3 \sec$...

19.- $(\cos 2x$...

$$14.-\ \cot(3x^3) = \csc^2 u \frac{du}{dx}$$

$$-\csc^2 3x^3\ (9x^2)$$

$$-9x^2 \csc^2 3x^3$$

$$15.-\ \sqrt{2x^3 \cos x^2} \qquad nu^{n-1}\frac{du}{dx} \qquad 2x^3 \cdot \cos x^2$$

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

$$\frac{1}{2}\cdot(2x^3 \cos x^2)^{-1/2}\cdot(\quad) \qquad du = 6x^2 \quad dv = -2x \operatorname{sen} x^2$$

$$\to -4x^4 \operatorname{sen} x^2 + 6x^2 \cos x^2$$

$$y' = \frac{-4x^4 \operatorname{sen} x^2 + 6x^2 \cos x^2}{2\sqrt{2x^3 \cos x^2}}$$

$$\boxed{y' = \frac{-4x^4 \operatorname{sen} x^2 + 6x^2 \cos x^2}{\sqrt{2x^3 \cos x^2}}}$$

11.- $\frac{2x^2}{\tan x^2}$ $U = 2x^2$ $du = 4x$ $V = \tan x^2$ $dv = 2x \sec^2 x^2$

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

12.- $\overset{U}{3x^2} \boxed{\overset{V}{\cos 3x^2}}$ $U \cdot V = \frac{du \cdot v - dv \cdot u}{v^2}$

$U = 3x^2$ $du = 6x$

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

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

13.- $\operatorname{sen} x^2 \cos x^2$ $U \cdot V = \frac{du \cdot v + dv \cdot u}{v^2}$

$U = \operatorname{sen} x^2$ $V = \cos x^2$

$du = 2x \cos x^2$ $dV = -2x \operatorname{sen} x^2$

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

8.- $y = \frac{5}{4+x^2}$ $\frac{dv \cdot u - du \cdot v}{v^2}$ $u = 5$ $du = 0$ $v = 4 + x^2$ $dv = 2x$

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

$y' = \frac{20 + 5x^2}{(4+x^2)^2}$

9.- $y = (1+2x)^2$ nu^{n-1} $n = 2$ $n-1 = 1$ $u = 1+2x$ $du = 2$

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

$y' = 2 + 4x \cdot 2$

$y' = 4 + 8x$

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

$\frac{3}{5}x^2 = \frac{6}{5}x$

$\frac{3}{4}x = \frac{3}{4}$

$\frac{1}{8} \to 0$

$R = \frac{6}{5}x - \frac{3}{4}$

6.- $y = \frac{3x+2}{2x-1}$ $\quad \frac{u}{v} = \frac{dv \cdot v - dv \cdot v}{v^2}$ $\quad u = 3x+2 \quad v = 2x-1$

$du = 3 \quad dv = 2$

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

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

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

7.- $y = \frac{3x^2+1}{2x}$ $\quad \frac{vdu - udv}{v^2}$ $\quad u = 3x^2+1 \quad v = 2x$

$du = 6x \quad dv = 2$

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

$$y' = \frac{12x^2-6x^2+2}{4x^2}$$

$$y' = \frac{6x^2+2}{4x^2} = \frac{6x^2}{4x^2} + \frac{2}{4x^2}$$

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