Calculo diferencial

Taller 3cer corte

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1) a) $y = 5x^4 - 2x^3 - 3x + 2$

$\frac{d}{dx}[5x^4] + \frac{d}{dx}[-2x^3] + \frac{d}{dx}[-3x] + \frac{d}{dx}[2]$

$5(4x^3) - 2(3x^2) - 3.1 + 0$

$20x^3 - 6x^2 - 3$

B) $y = x^2 \cdot (3x-2)$

$\frac{d}{dx}[f(x)\,g(x)] = f(x)\frac{d}{dx}[g(x)] + g(x)\frac{d}{dx}[f(x)]$

$f(x) = x^2$ y $g(x) = 3x - 2$

$x^2 \frac{d}{dx}[3x-2] + (3x-2)\frac{d}{dx}[x^2]$

$x^2(3.1 + \frac{d}{dx}[-2]) + (3x-2)\frac{d}{dx}[x^2]$

$x^2(3+0) + (3x-2)\frac{d}{dx}[x^2]$

$3x^2 + (3x-2)(2x)$.

$3x^2 + 2 \cdot (3x-2)x$

$3x^2 + 2(3x)x + 2 \cdot (-2x)$.

$3x^2 + 6x^2 - 4x$

$// 9x^2 - 4x$

c) $y = (x^2+3).(x^2-x) = \frac{d}{dx}[f(x)g(x)]$

$f(x)\frac{d}{dx}[g(x)] + g(x)\frac{d}{dx}[f(x)]$.

$f(x) = x^2+3$ y $g(x) = x^2 - x$

$(x^2+3)\frac{d}{dx}[x^2-x] + (x^2-x)\frac{d}{dx}[x^2+3]$

$(x^2+3)\left(2x + \frac{d}{dx}[-x]\right) + (x^2-x)\frac{d}{dx}[x^2+3]$

$(x^2+3)(2x-1) + (x^2-x)\frac{d}{dx}[x^2+3]$

$(x^2+3)(2x-1) + (x^2-x)\left(2x + \frac{d}{dx}[3]\right)$.

$(x^2+3)(2x-1) + (x^2-x)(x^2-x)x$.

$4x^3 - 3x^2 + 6x - 3$.

$4x^3 - 3x^2 + 6x - 3$. //

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2) a) $y = 3x.(x^2-x+1).(5x-3)$.

$3\frac{d}{dx}[(x(x^2-x+1))(5x-3)]$

$f(x)\frac{d}{dx}[g(x)] + g(x)\frac{d}{dx}[f(x)]$

$f(x) = x(x^2-x+1)$ y $g(x) = 5x-3$.

$(x(x^2-x+1)\frac{d}{dx}[5x-3] + (5x-3)\frac{d}{dx}[x(x^2-x+1)]$.

$3(5.[x(x^2-x+1)) + (5x-3)\frac{d}{dx}[x(x^2-x+1)]$.

$3(5x(x^2-x+1) + (5x-3)(x\frac{d}{dx}[x^2-x+1] + (x^2-x+1)$.

$\frac{d}{dx}[x]))$.

$3(5x[x^2-x+1) + (5x-3)(x(2x-1+\frac{d}{dx}[1]) + (x^2-x+1)$

$\frac{d}{dx}[x]))$

$3(5x(x^2-x+1) + (5x-3)(x(2x-1) + (x^2-x+1).1))$.

$60x^3 - 72x^2 + 48x - 9$.

b) $Y = (x+5)(x^3-1)\cdot(x^2-x+3)$.

$f(x) = (x+5)(x^3-1)$ y $g(x) = x^2 - x + 3$.

$(x+5)(x^3-1)\frac{d}{dx}[x^2-x+3] + (x^2-x+3)\frac{d}{dx}[(x+5)(x^3-1)]$

$(x+5)(x^3-1)(2x-1) + (x^2-x+3)\frac{d}{dx}[x+5](x^3-1)]$

$f(x) = x+5$ y $g(x) = x^3-1$. $(x+5)(x^3-1)(2x-1) + (x^2-x+3$

$((x+5)\frac{d}{dx}[x^2-1] + (x^3-1)\frac{d}{dx}[x+5])$

$(x+5)(x^3-1)(2x-1) + (x^2-x+3)\left((x+5)\left(3x^2 + \frac{d}{dx}[-1]\right) + (x^3-1)\right.$

$\left.\frac{d}{dx}[x+5]\right)$

$(x+5)(x^3-1)(2x-1) + (x^2-x+3)\left(3(x+5)x^2 + (x^3-1)\left(1 + \frac{d}{dx}[5]\right)\right)$.

$(x+5)(x^3-1)(2x-1) + (x^2-x+3)(3(x+5)x^2 + x^3 - 1)$.

// $(2x-1)(x+5)(x^3-1) + (4x^3+15x^2-1)(x^2-x+3)$.

3) a) $Y = \frac{x^2-3x+4}{3x-4} = \frac{\frac{d}{dx}[x^2] + \frac{d}{dx}[-3x] + \frac{d}{dx}[4]\cdot(3x-4)\left(\frac{d}{dx}[x^2] + \frac{d}{dx}[-3x]\right.}{\frac{d}{dx}[4]} - (x^2-3x+4)\frac{d}{dx}[3x-4]$

$(3x-4)^2$.

$\frac{(3x-4)\left(2x-3+\frac{d}{dx}[4]\right) - (x^2-3x+4)\frac{d}{dx}[3x-4]}{(3x-4)^2}$.

$\frac{(3x-4)(2x-3) - (x^2-3x+4)\left(3+\frac{d}{dx}[-4]\right.}{(3x-4)^2}$.

$\frac{(3x-4)(2x-3) - (x^2-3x+4)\cdot 3}{(3x-4)^2}$.

$\frac{(3x-4)(2x-3) - 3x^2 - 3(-3x) - 3\cdot 4}{(3x-4)}$.

// $\frac{3x^2-8x}{(3x-4)^2}$

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

$$\frac{\frac{d}{dx}[3x^2] + \frac{d}{dx}[-6] \cdot (x^2+x+1)\left(\frac{d}{dx}[3x^2] + \frac{d}{dx}[-6]\right) - (3x^2-6)\frac{d}{dx}[x^2+x+1]}{(x^2+x+1)^2}$$

$$\frac{(x^2+x+1)\left(3(2x) + \frac{d}{dx}[-6]\right) - (3x^2-6)\frac{d}{dx}[x^2+x+1]}{(x^2+x+1)^2}$$

$$\frac{6(x^2+x+1)x - (3x^2-6)\left(\frac{d}{dx}[x^2] + \frac{d}{dx}[x] + \frac{d}{dx}[1]\right)}{(x^2+x+1)^2}$$

$$\frac{6(x^2+x+1)x - (3x^2-6)\left(2x+1 + \frac{d}{dx}[1]\right)}{(x^2+x+1)^2}$$

$$\frac{(6x^2+6x+6\cdot 1)x - (3x^2-6)(2x+1)}{(x^2+x+1)^2}$$

$$\frac{6x^3+6x^2+6x - 6x^3 - 3x^2 + 12x + 6}{(x^2+x+1}$$

$$\frac{3x^2+6x+12x+6}{(x^2+x+1}$$

$$\frac{3x^2+18x+6}{(x^2+x+1)^2}$$

4) a) $y = \frac{x^3 - 5x + 2}{x^2 - 3x}$

$$\frac{\frac{d}{dx}[x^3] + \frac{d}{dx}[-5x] + \frac{d}{dx}[2] \cdot (x^2 - 3x)\left(\frac{d}{dx}[x^3] + \frac{d}{dx}[5x] + \frac{d}{dx}[2]\right) - (x^3 - 5x + 2)\frac{d}{dx}[x^2 - 3x]}{(x^2 - 3x)^2}$$

$$\frac{(x^2 - 3x)(3x^2 - 5 + \frac{d}{dx}[2]) - (x^3 - 5x + 2)\frac{d}{dx}[x^2 - 3x]}{(x^2 - 3x)^2}$$

$$\frac{(x^2 - 3x)(3x^2 - 5) - (x^3 - 5x + 2)\left(\frac{d}{dx}[x^2] + \frac{d}{dx}[-3x]\right)}{(x^2 - 3x)^2}$$

$$\frac{(x^2 - 3x)(3x^2 - 5) - (x^3 - 5x + 2)(2x - 3)}{(x^2 - 3x)^2}$$

$$\frac{3x^4 - 5x^2 - 9x^3 + 15x - 2x^4 + 3x^3 + 10x^2 - 19x + 6}{(x^2 - 3x)^2}$$

$$\frac{x^4 - 6x^3 + 5x^2 - 4x + 6}{(x^2 - 3x)^2}$$

8) $y = \frac{x^2 - 3x + 11}{x^2 + x - 3}$

$$\frac{\frac{d}{dx}[x^2] + \frac{d}{dx}[-3x] + \frac{d}{dx}[11] \cdot (x^2 + x - 3)\left(\frac{d}{dx}[x^2] + \frac{d}{dx}[-3x] + \frac{d}{dx}[11]\right) - (x^2 - 3x + 11)\frac{d}{dx}[x^2 + x - 3]}{(x^2 + x - 3)^2}$$

$$\frac{(x^2 + x - 3)(2x + \frac{d}{dx}[-3x] + \frac{d}{dx}[11]) - (x^2 - 3x + 11)\frac{d}{dx}[x^2 + x - 3]}{(x^2 + x - 3)^2}$$

$$\frac{(x^2 + x - 3)(2x - 3 + \frac{d}{dx}[11]) - (x^2 - 3x + 11)\frac{d}{dx}[x^2 + x - 3]}{(x^2 + x - 3)^2}$$

$$\frac{(x^2 + x - 3)(2x - 3) - (x^2 - 3x + 11)(2x + \frac{d}{dx}[x] + \frac{d}{dx}[-3])}{(x^2 + x - 3)^2}$$

$$\frac{(x^2 + x - 3)(2x - 3) - (x^2 - 3x + 11)(2x + 1)}{(x^2 + x - 3)^2} = \frac{4x^2 - 28x - 2}{(x^2 + x - 5)^2} \;//$$

5) a) $y=(x^2-5x+3)^4$

$f(x)=x^4$ y $g(x)=x^2-5x+3$.

$\frac{d}{du}[u^4]\frac{d}{dx}[x^2-5x+3]$

$4u^3\frac{d}{dx}[x^2-5x+3]$

$4(x^2-5x+3)^3\frac{d}{dx}[x^2-5x+3]$

$4(x^2-5x+3)^3\left(2x+\frac{d}{dx}[-5x]+\frac{d}{dx}[3]\right)$.

$4(x^2-5x+3)^3\left(2x-5+\frac{d}{dx}[3]\right)$

$//4(x^2-5x+3)^3(2x-5)$.

B) $y=(3x-2)^5$ "

$f(x)=x^5$ y $g(x)=3x-2$.

$\frac{d}{du}[u^5]\frac{d}{dx}[3x-2]$

$5u^4\frac{d}{dx}[3x-2]$

$5(3x-2)^4\frac{d}{dx}[3x-2]$

$5(3x-2)^4\left(3+\frac{d}{dx}[-2]\right)$

$5(3x-2)^4(3+0)$.

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

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6) A) $y=(x^3-x-1)^4 = f(x)=x^4$ y $g(x)=x^3-x-1$

$\frac{d}{du}[u^4]\frac{d}{dx}[x^3-x-1] = 4u^3\frac{d}{dx}[x^3-x-1]$

$4(x^3-x-1)^3\frac{d}{dx}[x^3-x-1]$

$4(x^3-x-1)^3\left(3x^2+\frac{d}{dx}[-x]+\frac{d}{dx}[-1]\right.$

$4(x^3-x-1)^3\left(3x^2-1+\frac{d}{dx}[-1]\right)$.

$//4(x^3-x-1)^3(3x^2-1)$

B) $y = \sqrt[3]{x^2 - 5x} = f(x) = x^{\frac{1}{3}-1}$ y $g(x) = x^2 - 5x$

$\frac{1}{3}(x^2-5x)^{\frac{1}{3}-1} \frac{d}{dx}[x^2-5x]$

$\frac{1}{3}(x^2-5x)^{\frac{1-1\cdot3}{3}} \frac{d}{dx}[x^2-5x]$

$\frac{1}{3}(x^2-5x)^{-\frac{2}{3}} \frac{d}{dx}[x^2-5x]$

$\frac{1}{3(x^2-5x)^{\frac{2}{3}}}\left(\frac{d}{dx}[x^2]+\frac{d}{dx}[-5x]\right.$

$\frac{1}{3(x^2-5x)^{\frac{2}{3}}}\left(2x-5\frac{d}{dx}[x]\right)$

$\frac{1}{3(x^2-5x)^{\frac{2}{3}}}(2x-5\cdot1)$

$\parallel (2x-5)\frac{1}{3(x^2-5x)^{\frac{2}{3}}}$

8) A) $y = \sqrt[4]{x^3-x+3} = f(x) = x^{\frac{1}{4}}$ y $g(x) = x^3-x+3$.

$\frac{d}{du}[u^{\frac{1}{4}}] \frac{d}{dx}[x^3-x+3]$

$\frac{1}{4}u^{\frac{1}{4}-1}\frac{d}{dx}[x^3-x+3]$

$\frac{1}{4}(x^3-x+3)^{\frac{1}{4}+\frac{-1\cdot4}{4}}\frac{d}{dx}[x^3-x+3]$

$\frac{1}{4}(x^3-x+3)^{-\frac{3}{4}}\frac{d}{dx}[x^3-x+3]$

$\frac{1}{4(x^3-x+3)^{\frac{3}{4}}}\left(\frac{d}{dx}[x^3]+\frac{d}{dx}[-x]+\frac{d}{dx}[3]\right)$

$\frac{1}{4(x^3-x+3)^{\frac{3}{4}}}\left(3x^2-1+\frac{d}{dx}[3]\right)$

$\frac{1}{4(x^3-x+3)^{\frac{3}{4}}}(3x^2-1+0)$.

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

B) $y=\sqrt[3]{x^3+x^2-7}$ $= f(x)=x^{\frac{1}{3}}$ y $g(x)=x^3+x^2-7$.

$\frac{1}{3}(x^3+x^2-7)^{\frac{1}{3}-1}\frac{d}{dx}[x^3+x^2-7]$

$\frac{1}{3}(x^3+x^2-7)^{\frac{1-1\cdot3}{3}}\frac{d}{dx}[x^3+x^2-7]$

$\frac{1}{3}(x^3+x^2-7)^{-\frac{2}{3}}\frac{d}{dx}[x^3+x^2-7]$

$\frac{1}{3(x^3+x^2-7)^{\frac{2}{3}}}\left(\frac{d}{dx}[x^3]\frac{d}{dx}[x^2]\frac{d}{dx}[-7]\right)$

$\frac{1}{3(x^3+x^2-7)^{\frac{2}{3}}}\left(3x^2+2x+\frac{d}{dx}[-7]\right)$

$\frac{1}{3(x^3+x^2-7)^{\frac{2}{3}}}(3x^2+2x+0)$.

$\frac{1}{3(x^3+x^2-7)^{\frac{2}{3}}}(3x^2+2x)$.

$(3x^3+2x)\frac{1}{3(x^3+x^2-7)^{\frac{2}{3}}}$.

9) $f(x)=\operatorname{sen}x$

$\cos(x)$.

10) $f(x)=\sqrt[5]{x}$

$\frac{d}{dx}\left[x^{\frac{1}{5}}\right]$

$\frac{1}{5}x^{\frac{1}{5}-1}$

$\frac{1}{5}x^{\frac{1}{5}-1\cdot\frac{5}{5}}$

$\frac{1}{5}x^{\frac{1-1\cdot5}{5}}$

$\frac{1}{5}x^{\frac{-4}{5}}$

$\frac{1}{5}x^{-\frac{4}{5}}$

$\frac{1}{5}\cdot\frac{1}{x^{\frac{4}{5}}}$

$\frac{1}{5x^{\frac{4}{5}}}$

A) $f(x) = \cos(3x+3)$ $\quad = \quad f(x) = \cos[x]$ y $g(x) = 3x+3$

$\frac{d}{du}[\cos(u)]\ \frac{d}{dx}[3x+3]$

$-\sin(u)\ \frac{d}{dx}[3x+3]$

$-\sin(3x+3)\ \frac{d}{dx}[3x+3]$

$-\sin(3x+3)\left(\frac{d}{dx}[3x] + \frac{d}{dx}[3]\right)$

$-\sin(3x+3)\left(3 + \frac{d}{dx}[3]\right)$.

$-\sin[3x+3)(3+0)$.

$//-3\sin(3x+3)$

B) $f(x) = \cos(3x^2+3x)$ $\quad = f(x) = \cos(x)$ y $g(x) = 3x^2+3x$

$\frac{d}{du}[\cos(u)]\ \frac{d}{dx}[3x^2+3x]$

$-\sin(u)\ \frac{d}{dx}[3x^2+3x]$

$-\sin(3x^2+3x)\ \frac{d}{dx}[3x^2+3x]$

$-\sin[3x^2+3x)\left(3\frac{d}{dx}[x^2]\ \frac{d}{dx}[3x]\right)$

$-\sin(3x^2+3x)\left(3(2x) + \frac{d}{dx}[3x]\right)$

$-\sin(3x^2+3x)\left(6x + 3\frac{d}{dx}[x]\right)$

$-\sin[3x^2+3x)[6x+3.1]$

$//-\sin(3x^2+3x)(6x+3)$

C) $f(x)\ \frac{1}{\text{sen}(x+1)} = \frac{d}{dx}[f(x)\csc(x+1)]$

$f(x)\ \frac{d}{dx}[\csc(x+1)]$

$f(x) = \csc(x)$ y $g(x) = x+1$

$f(x)\left(-\csc(x+1)\cot(x+1)\ \frac{d}{dx}[x+1]\right)$

$f(x)\ -\csc(x+1)\cot(x+1)\left(\frac{d}{dx}[x]+\frac{d}{dx}[1]\right)$

$f(x) - \csc(x+1)\cot(x+1)\left(1+\frac{d}{dx}[1]\right)$

$-f(x)\csc(x+1)\cot(x+1)(1+0)$

$-f(x)\csc(x+1)\cot(x+1)\cdot 1$

$-f(x)\csc(x+1)\cot(x+1)$

$//-\cot(x+1)\csc(x+1)f(x)$

D). $f(x)\ \frac{1}{\cos x} + \frac{1}{\text{sen}(x+1)}$

$\frac{d}{dx}\left[f(x)\left(\frac{1}{\cos(x)}\right)\right]+\frac{d}{dx}\left[\frac{1}{\sin(x+1)}\right]+\frac{d}{dx}\left[f(x)\left[\frac{1}{\cos(x)}\right]\right]+\frac{d}{dx}\left[\frac{1}{\sin(x+1)}\right]$

$f(x)\frac{d}{dx}[\sec(x)]+\frac{d}{dx}\left[\frac{1}{\sin(x+1)}\right]$

$f(x)\sec(x)\tan(x)\ \frac{d}{dx}\left[\frac{1}{\sin(x+1)}\right]$

$f(x)\sec(x)\tan(x)+\frac{d}{dx}[\csc(x+1)]$

$f(x)=\csc(x)$ y $g(x)=x+1$

$-\csc(x+1)\cot(x+1)\ \frac{d}{dx}[x+1]$

$-\csc(x+1)\cot(x+1)\left(\frac{d}{dx}[x]+\frac{d}{dx}[1]\right)$

$-\csc(x+1)\cot(x+1)\left(1+\frac{d}{dx}[1]\right)$

$f(x)\sec(x)\tan(x)-\csc(x+1)\cot(x+1)\cdot 1$

$f(x)\sec(x)\tan(x)-\csc(x+1)\cot(x+1)$

$//\sec(x)\tan(x)f(x)-\cot(x+1)\csc(x+1)$

E) $f(x) = \frac{1}{\operatorname{sen} x} - \frac{1}{\cos(x-1)}$

$\frac{d}{dx}\left[\frac{1}{\sin(x)}\right] + \frac{d}{dx}\left[-\frac{1}{\cos(x-1)}\right] + \frac{d}{dx}\left[\frac{1}{\sin(x)}\right] + \frac{d}{dx}\left[-\frac{1}{\cos(x-1)}\right]$

$-\csc(x)\cot(x) + \frac{d}{dx}\left[-\frac{1}{\cos(x-1)}\right]$

$-\csc(x)\cot(x) + \frac{d}{dx}\left[-\sec(x-1)\right]$

$-\csc(x)\cot(x) + \frac{d}{dx}\left[\sec(x-1)\right]$

$f(x) = \sec(x)$ y $g(x) = x-1$

$-\csc(x)\cot(x) - \left[\sec(x-1)\tan(x-1)\left(1 + \frac{d}{dx}[1]\right)\right]$

$-\csc(x)\cot(x) - (\sec(x-1)\tan(x-1)(1+0)$

$-\csc(x)\cot(x) - (\sec(x-1)\tan(x-1)\cdot 1)$

$-\csc(x)\cot(x) - \sec(x-1)\tan(x-1)$

$-\cot(x)\csc(x) - \sec(x-1)\tan(x-1)$

F) $f(x) = \sqrt[3]{\cos(3x+3)} = f(x) = x^{\frac{1}{3}}$ y $g(x) = \cos(3x+3)$

$\frac{1}{3}\cos(3x+3)^{1-\frac{1}{3}} \frac{d}{dx}[\cos(3x+3)$

$\frac{1}{3}\cos(3x+3)^{-\frac{2}{3}} \frac{d}{dx}[\cos(3x+3)]$

$\frac{1}{3\cos(3x+3)^{\frac{2}{3}}} \frac{d}{dx}[\cos(3x+3]$

$f(x) = \cos(x)$ y $g(x) = 3x+3$

$\frac{1}{3\cos(3x+3)^{\frac{2}{3}}}\left(-\sin(3x+3\frac{d}{dx}[3x+3]\right)$

$\frac{3(-\sin(3x+3))}{3\cos(3x+3)^{\frac{2}{3}}}$

$\frac{3(-\sin(3x+3))}{3\cos(3x+3)^{\frac{2}{3}}}$

$\frac{-\sin(3x+3)}{\cos(3x+3)^{\frac{2}{3}}} = -\frac{\sin(3x+3)}{\cos(3x+3)^{\frac{2}{3}}}$

g) $f(x)=\frac{1}{\operatorname{sen}(x+1)}+(x^5-x^3+3)^4$

$\frac{d}{dx}\left[\frac{1}{\operatorname{sen}(x+1)}\right]\frac{d}{dx}\left[(x^5-x^3+3)^4\right]+\frac{d}{dx}\left[\frac{1}{\operatorname{sen}(x+1)}\right]+\frac{d}{dx}\left[(x^5-x^3+3)^4\right]$

$\frac{d}{dx}[\csc(x+1)]\ \frac{d}{dx}\left[(x^5-x^3+3)^4\right]$

$f(x)=\csc(x)$ y $g(x)=x+1$

$-\csc(x+1)\cot(x+1)\frac{d}{dx}[x+1]+\frac{d}{dx}\left[(x^5-x^3+3)^4\right]$

$-\csc(x+1)\cot(x+1)+\frac{d}{dx}\left[(x^5-x^3+3)^4\right]$

$-\csc(x+1)\cot(x+1)+4(x^5-x^3+3)^3\left(5x^4+\frac{d}{dx}[-x^3]+\frac{d}{dx}[3]\right)$

$-\csc(x+1)\cot(x+1)+4(x^5-x^3+3)^3\left(5x^4-(3x^2\frac{d}{dx}[3]\right)$

$-\csc(x+1)\cot(x+1)+4(x^5-x^3+3)^3(5x^4-(3x^2+0)$

$-\csc(x+1)\cot(x+1)+4(x^5-x^3+3)^3(5x^4-3x^2+0)$

// $-\cot(x+1)\csc(x+1)+4(x^5-3^3+3)^3(5x^4-3x^2)$

ii) $f(x)=\ln(x-1)+e^{x+1}$

$\frac{d}{dx}[\ln(x-1)]+\frac{d}{dx}\left[e^{x+1}\right]$

$\frac{1}{x-1}\frac{d}{dx}[x-1]+\frac{d}{dx}\left[e^{x+1}\right]$

$\frac{1}{x-1}\left(\frac{d}{dx}[x]+\frac{d}{dx}[-1]\right)+\frac{d}{dx}\left[e^{x+1}\right]$

$\frac{1}{x-1}\cdot 1+\frac{d}{dx}\left[e^{x+1}\right]$

$\frac{1}{x-1}+e^{x+1}\left(\frac{d}{dx}[x]+\frac{d}{dx}[1]\right)$

$\frac{1}{x-1}+e^{x+1}\left(1+\frac{d}{dx}[1]\right)$

$\frac{1}{x-1}+e^{x+1}\cdot 1$

$\frac{1}{x-1}+e^{x+1}$

// $\frac{e^{x+1}(x-1)+1}{x-1}$

I) $f(x) = e^{x-3} + \cos(x+1) - x^2$

$\frac{d}{dx}[e^{x-3}] + \frac{d}{dx}[\cos(x+1)] + \frac{d}{dx}[-x^2]$

$e^{x-3}\frac{d}{dx}[x-3] + \frac{d}{dx}[\cos(x+1)]\frac{d}{dx}[-x^2]$

$e^{x-3}\left(1 + \frac{d}{dx}[-3]\right) + \frac{d}{dx}[\cos(x+1)] + \frac{d}{dx}[-x^2]$

$e^{x-3}\cdot 1 + \frac{d}{dx}[\cos(x+1)] + \frac{d}{dx}[-x^2]$

$e^{x-3} + \frac{d}{dx}[\cos(x+1)] + \frac{d}{dx}[-x^2]$

$e^{x-3} - \sin(x+1)\left(\frac{d}{dx}[x] + \frac{d}{dx}[1]\right) + \frac{d}{dx}[-x^2]$

$e^{x-3} - \sin(x+1)\cdot 1 + \frac{d}{dx}[-x^2]$

$e^{x-3} - \sin(x+1) + \frac{d}{d}[-x^2]$

$e^{x-3} - \sin(x-1) - 2x$

$//-2x + e^{x-3} - \sin(x+1)$

J) $f(x) = \tan(x-5)$.

$f(x) = \tan(x)$ y $g(x) = x-5$

$\frac{d}{du}[\tan(u)]\frac{d}{dx}[x-5]$

$\sec^2(u)\frac{d}{dx}[x-5]$

$\sec^2(x-5)\frac{d}{dx}[x-5]$

$\sec^2(x-5)\left(\frac{d}{dx}[x] + \frac{d}{dx}[-5]\right)$

$\sec^2(x-5)\left(1 + \frac{d}{dx}[-5]\right)$

$\sec^2(x-5)\cdot 1$

$\sec^2(x-5)$