Exercícios

a) f(x)=10 → f(x) é constante f'(x)=0
b) f(x)= x^5 f'(x)=5. $x^{5-1} = 5.\ x^4$
c) f(x)= $10x^5$ f'(x)=5.10 $x^{5-1} = 50.\ x^4$

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d) f(x)= $\frac{1}{2}x^2 = 2.\ \frac{1}{2}x^{2-1} =$ x
e) f(x) $= x^2 + x^3 = 2\ x^{2-1} + 3x^{3-1} =$ 2x+3x^2
f) f(x) $= 10x^3 + 5x^2 = 3.10\ x^{3-1} + 5.2x^{2-1} =$ 30x^2+10x
g) f(x)=2x+1 $= 2.1\ x^{1-1}$ +0 $= 2$

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h) f(t)= $3t^2$ -6t -10 f'(x)=3.2 t^{2-1} -6.1 t^{1-1} $- 0 =$ 6t-6

i) f(u)= $5u^3$ - $2u^2 + 6u + 7$ f'(u)= $5.3u^{3-1}$ - $2.2u^{2-1} + 6.1u^{1-1} + 0$=
$15u^2$ - $4u$ $+ 6$

m) f(x)= $x.senx$ f(x)=u(x).v(x) → f'(x)=u(x).v'(x)+u'(x).v(x)=
x.cos x+1 x^{1-1} sen x = x.cos x+sen x

n) f(x)=x^2ln(x) f(x)=u(x).v(x) → f'(x)=u(x).v'(x)+u'(x).v(x)=
$x^2.\frac{1}{x}$ + 2 x^{2-1}.ln(x) = x+2x.ln(x)

o) f(x)=($2x^2$-3x+5)(2x-1) f(x)=u(x).v(x) →
f'(x)=u(x).v'(x)+u'(x).v(x)= ($2x^2$-3x+5).(2.1 x^{1-1} + 0) +
$(2.2x^{2-1} - 3.1x^{1-1} + 0).(2x-1)$ = ($2x^2$-3x+5)2+(4x-3)(2x-1)=
$4x^2$-6x+10+ $8x^2$-4x-6x+3= $12x^2$-16x+13

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p) $f(x)= \frac{sen(x)}{X^2} = f(x)= \frac{u(x)}{v(x)} \rightarrow f'(x)= \frac{u'(x).v(x)-u(x).v'(x)}{v(x)^2} =$

$\frac{\cos(x).x^2 - sen(x).2x^{2-1}}{x^4} = \frac{\cos(x).x^2 - sen(x).2x}{x^4}$

q) $f(x)= \frac{sen(x)}{\cos(x)} = f(x)= \frac{u(x)}{v(x)} \rightarrow f'(x)= \frac{u'(x).v(x)-u(x).v'(x)}{v(x)^2} =$

$f'(x)= \frac{\cos(x).\cos(x)-sen(x).(-sen(x))}{\cos(x)^2} = f'(x)= \frac{\cos(x)^2 + sen(x)^2}{\cos(x)^2} =$

$\frac{1}{\cos(x)^2}$