Lista 11

① a) $y = \cos 2x$

$-\sin 2x \cdot d(2x)$

$-2\sin(2x)$

b) $y = \sin 2x^3$

$\cos 2x^3 \frac{d}{dx}(2x^3)$

$6x^2 \cos 2x^3$

c) $y = \sin^4 x$

$4\sin^3 \frac{d}{dx}(\sin x)$

$4\sin^3 x \cos x$

d) $\sin 2x$

$\cos(2x) \frac{d}{dx}(2x)$

$4x \cos 2x^2$

e) $y = \cos(1/x)$

$-\sin(1/x) \frac{d}{dx}(\frac{1}{x})$

$-\sin(1/x) \cdot -\frac{1}{x^2}$

$+\frac{\sin(1/x)}{x^2}$

f) $y = \operatorname{tg}\sqrt{x} + \cot(3x)$

$\frac{d}{dx}\operatorname{tg}(\sqrt{x}) + \frac{d}{dx}\cot(3x)$

$\frac{\sec^2\sqrt{x}}{2\sqrt{x}} - \operatorname{cossec}^2(3x)3$

g) $\frac{\frac{d}{dx}(\cot x)(1+\cot(x)) - \frac{d}{dx}(1+\cot x)\cot x}{(1+\cot(x))^2}$

$\frac{-\operatorname{sen}(x)(1+\cot(x)) - (-\operatorname{cossec}^2(x))\cos(x)}{(\quad)}$

$\frac{-\cos(x) - \operatorname{sen}(x) + \cot(x)\operatorname{cossec}(x)}{(1+\cot x)^2}$

h) $y = \ln(x^2+3x+7)$

$\ln(x^2+3x+7)\,tg(x^2+3x+7)\,d/dx\,(x^2+3x+7)$

$\ln(x^2+3x+7)\,tg(x^3+3x+7)\,(2x+3)$

i) $y = \operatorname{sen}(\frac{\pi}{2} - x) = \cos$

$y = \cos(x)$

$-\operatorname{sen}(x)$

j) $\frac{\frac{d}{dx}(\cos(x))(1-\cot(x)) - \frac{d}{dx}(1-\cot(x))\cos x}{(1-\cot x)^2}$

$\frac{-\operatorname{sen}x(1-\cot(x)) - \cot(x)\operatorname{cossec}(x)}{1-\cot(x)^2}$

k) $\sin\sqrt{3x^2-1}$

$\cos(\sqrt{3x^2-1})\, d/dx(\sqrt{3x^2-1})$

$\frac{3x\cos(\sqrt{3x^2-1})}{\sqrt{3x^2-1}}$

l) $\operatorname{sen} 3x^2$

$\cos(3x^2)\, d_x(3x^2)$

$6x\cos 3x^2$

m) $\cos^3 x$

$3\cos^2 x \frac{d}{dx}(\cos x)$

$-3\cos^2 x \operatorname{sen} x$

n) $\sin 5x^2$

$\cos 5x^2 \frac{d}{dx}(5x^2$

$10x\cos(5x)^2$

o) $\cos 5x^3$

$-\operatorname{sen}(5x^3)\frac{d}{dx}(5x^3)$

$-15x^2 \sin 5x^3$

a) a) x^3+2x^2+1

1ª) $3x^2+4x$

2ª) $6x+4$

3ª) 6

b) x^5+3x^3+x+5

1) $5x^4-9x+2x$

2) $20x^3-18x+2$

3) $6x^2-18$

4) $120x$

5) 120

b) a) $3x^2+1\,dx+1$

$\frac{d}{dx}(6x+8)$

6

b) $\operatorname{tg} x$

$\frac{d}{dx}(\sec^2(x)$

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

c) $y=\sqrt{x^2+1}$

$\frac{d}{dx}\frac{\sqrt{x}}{\sqrt{x^2+1}}$

$\frac{1}{(x^2+1)\sqrt{x^2+1}}$

d) $2x^4(3x^3+4x^2-x+2)$

$d/dx(8x^3-9x^2+8x-1)$

$24x^2-18x+8$

(4) $\frac{ds}{d^5x}(3x^5 + 8x^2)$

1) " $15x^4 + 16x$

2) " $60x^3 + 16$

3) " $180x^2 + 0$

4) " $360x$

5) " 360

(5) $y'' = 6x^3 - 4x^2 - 10$

1) $d/dx(18x^2 - 8x - 0)$

2) " $(36x - 8)$

3) " (36)

(6) $y'' = e^{\frac{x}{2}}$

$\frac{d}{dx}(e^{\frac{x}{2}})$

2

" $(\frac{1}{4} \cdot e^{\frac{x}{2}})$

" $\frac{1}{8} e^{\frac{x}{2}}$

(7) a) $\frac{d^4}{dx^4}(3x^5 - 2x - 7)$

1 $d/dx(12x^3 - 2)$

2 " $(36x^2)$

3 " $(72x)$

4 72

b) $\frac{ds}{dx}(2x^5 + 3x^2)$

1 $d/dx(10x^4 + 6x)$

2 " $(40x^3 + 6)$

3 " $(120x^2)$

4 " $(240x)$

5: 240