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$y = sen^2 x + e^{\cos x} = (sen\ x)^2 + e^{\cos x}$

$$y' = 2(sen\ x)^1 \cos x + e^{\cos x}(-\ sen\ x) = 2\ sen\ x \cos x - e^{\cos x}\ sen\ x$$

$$y = \frac{\sqrt[4]{2x}}{2^{x-1}} \qquad y' = \frac{\frac{1}{2\sqrt[4]{(2x)^3}}\, 2^{x-1} - \sqrt[4]{2x}\ 2^{x-1}\,(Ln\ 2)\cdot 1}{\left(2^{x-1}\right)^2} = \frac{\frac{1}{2\sqrt[4]{(2x)^3}} - \sqrt[4]{2x}\ Ln\ 2}{2^{x-1}}$$

$$y = \sqrt[4]{2x} = (2x)^{1/4} \quad \rightarrow \quad y' = \frac{1}{4}(2x)^{\frac{1}{4}-1}\, 2 = \frac{1}{2}(2x)^{\frac{-3}{4}} = \frac{1}{2\,(2x)^{\frac{3}{4}}} = \frac{1}{2\sqrt[4]{(2x)^3}}$$

$$y = e^{sen\ x}\left[Ln\,(tg\ x)\right] \qquad y' = e^{sen\ x}(\cos x)\left[Ln\,(tg\ x)\right] + e^{sen\ x}\,\frac{\frac{1}{\cos^2 x}}{tg\ x}$$

$f)\ y=3\cos(Ln\, x)$

$$y'=3(-sen\,(Ln\, x))\frac{1}{x}=\frac{-3\ sen\,(Ln\, x)}{x}$$

$g)\ y=\sqrt{x+\sqrt{x}}$ $$y'=\frac{1}{2\sqrt{x+\sqrt{x}}}\left(1+\frac{1}{2\sqrt{x}}\right)=\frac{1+\frac{1}{2\sqrt{x}}}{2\sqrt{x+\sqrt{x}}}$$

$h)\ y=arctg\,\frac{1-x}{1+x}$ $$y'=\frac{1}{1+\left(\frac{1-x}{1+x}\right)^2}\ \frac{-1(x+1)-(1-x).1}{(1+x)^2}=\frac{1}{1+\left(\frac{1-x}{1+x}\right)^2}\ \frac{-2}{(1+x)^2}$$

$$-x-1-1+x$$

$i)\ y=7^{\sqrt{x}}+\frac{\cos x}{x^2}$ $$y'=7^{\sqrt{x}}\,(Ln\,7)\frac{1}{2\sqrt{x}}+\frac{-x^2\ sen\,x-2x\cos x}{x^4}=$$

$$=\frac{7^{\sqrt{x}}\ Ln\,7}{2\sqrt{x}}+\frac{-x\ sen\,x-2\cos x}{x^3}$$

$j)\ y=\frac{e^x-e^{-x}}{e^x+e^{-x}}$ $$y'=\frac{\left(e^x-e^{-x}(-1)\right)\left(e^x+e^{-x}\right)-\left(e^x-e^{-x}\right)\left(e^x+e^{-x}(-1)\right)}{\left(e^x+e^{-x}\right)^2}=$$

$$=\frac{\left(e^x+e^{-x}\right)\left(e^x+e^{-x}\right)-\left(e^x-e^{-x}\right)\left(e^x-e^{-x}\right)}{\left(e^x+e^{-x}\right)^2}=\frac{e^{2x}+2e^xe^{-x}+e^{-2x}-\left(e^{2x}-2e^xe^{-x}+e^{-2x}\right)}{\left(e^x+e^{-x}\right)^2}=$$

$$=\frac{4e^xe^{-x}}{\left(e^x+e^{-x}\right)^2}=\frac{4}{\left(e^x+e^{-x}\right)^2}$$

12)

$$y=Ln\frac{x^2+1}{x^2-1}=Ln\left(x^2+1\right)-Ln\left(x^2-1\right)$$

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

$$y=Ln\sqrt{\frac{x}{x^2+1}}=Ln\left(\frac{x}{x^2+1}\right)^{1/2}=\frac{1}{2}Ln\left(\frac{x}{x^2+1}\right)=\frac{1}{2}\left(Ln\,x-Ln\left(x^2+1\right)\right)$$

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

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