Math Differentiator

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Annotation

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Original expression

$$\sinh\left(x\cdot y+1\right)+\arctan\left(\frac{\left(x^2+y^2\right)}{\left(x-y\right)}\right)+\sin\left(y\right)$$

The full differential of the expression

$$\mathrm{d}f=\left[\cosh\left(x\cdot y+1\right)\cdot y+\frac{\frac{\left(2\cdot x\cdot\left(x-y\right)-\left(x^2+y^2\right)\right)}{\left(x-y\right)\cdot\left(x-y\right)}}{\left(\left(\frac{\left(x^2+y^2\right)}{\left(x-y\right)}\right)^2+1\right)}\right]\mathrm{d}x+\left[\cosh\left(x\cdot y+1\right)\cdot x+\frac{\frac{\left(2\cdot y\cdot\left(x-y\right)-\left(\left(x^2+y^2\right)\cdot-1\right)\right)}{\left(x-y\right)\cdot\left(x-y\right)}}{\left(\left(\frac{\left(x^2+y^2\right)}{\left(x-y\right)}\right)^2+1\right)}+\cos\left(y\right)\right]\mathrm{d}y$$

Partial derivatives

- Partial derivative of по x:

$$\frac{\partial f}{\partial x}=\cosh\left(x\cdot y+1\right)\cdot y+\frac{\frac{\left(2\cdot x\cdot\left(x-y\right)-\left(x^2+y^2\right)\right)}{\left(x-y\right)\cdot\left(x-y\right)}}{\left(\left(\frac{\left(x^2+y^2\right)}{\left(x-y\right)}\right)^2+1\right)}$$

- Partial derivative of по y:

$$\frac{\partial f}{\partial y}=\cosh\left(x\cdot y+1\right)\cdot x+\frac{\frac{\left(2\cdot y\cdot\left(x-y\right)-\left(\left(x^2+y^2\right)\cdot-1\right)\right)}{\left(x-y\right)\cdot\left(x-y\right)}}{\left(\left(\frac{\left(x^2+y^2\right)}{\left(x-y\right)}\right)^2+1\right)}+\cos\left(y\right)$$