Performance Comparison: Python vs Cython Implementations
(Percentage Speedup for Arithmetic, Trigonometric, and Differentiation Operations)

Category	Operation	Percentage Speedup
Arithmetic, Logarithmic, and Exponential	$x + y$	29.31
	$x - y$	30.36
	$x \times y$	29.04
	x/y	19.23
	$\exp(x)$	22.68
	$\log(x)$	16.07
Trigonometric Functions	$\sin(x)$	23.37
	$\cos(x)$	19.92
	$\tan(x)$	17.58
	$\sinh(x)$	20.77
	$\cosh(x)$	23.85
	$\tanh(x)$	18.66
Differentiation of Functions		
Sigmoid: Binary classification activation.	$f(x) = \frac{1}{1+e^{-x}}$	27.38
Tanh: Activation for recurrent neural networks.	$f(x) = \tanh(x)$	22.82
ReLU: Popular activation in deep learning.	$f(x) = \max(0, x)$	33.87
Softplus: Smooth ReLU variant in probabilistic models.	$f(x) = \log(1 + e^x)$	27.73
MSE: Loss function for regression.	$f(x) = (x - 1)^2$	26.51
BCE: Loss function for binary classification.	$f(x) = -[y \log(x) + (1 - y) \log(1 - x)]$	26.12