

Re: Derivative/Integral of x^x

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What is the derivative/integral of x^x ? I know they exist, b/c my graphing calculator can calculate them, but what are the formulas?
Thanks!!!!

The derivative of x^x is fairly easy: if $y = x^x$ then $\ln(y) = x \ln(x)$. The derivative of $\log(y)$ with respect to x , by the chain rule, is $(1/y)(dy/dx)$ and the derivative of $x \ln(x)$, by the product rule, is $\ln(x) + x(1/x) = \ln(x) + 1$. That is, $(1/y)(dy/dx) = \ln(x) + 1$ and so $dy/dx = y(\ln(x) + 1) = x^x \ln(x) + x^x$.

I would be interested in knowing what your calculator gives for the integral of x^x !

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