

“What to say in front of the blackboard” – a brief tutorial

Exercise: Calculate the derivative of $(x^2 + 12x + 7)^x$

$$[(x^2 + 12x + 7)^x]' =$$

↑
*the derivative of x square
plus twelve x plus seven
all to the power of x*

$$(e^{x \ln(x^2 + 12x + 7)})' =$$

↑
*it's the same as e to the power
of x times the natural logarithm
of the content of brackets in the
previous step*

$$e^{x \ln(x^2 + 12x + 7)}$$

↑
*the derivative of the most
outer function is the same
as the original one*

*

$$(\ln(x^2 + 12x + 7) + x(2x + 12)/(x^2 + 12x + 7))$$

↑
*next we multiply it by the derivative of the
power using product rule and it is: the natural
logarithm of x square plus twelve x plus seven
plus x times two x plus twelve over x square plus
twelve x plus seven*

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