

Asides

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12:14 PM

Define $\square(z^n) = \sum x^k \otimes y^{n-k}$. what is $\square(e^z)$?

Ans.

$$\square(e^z) = \sum_{m,n} \frac{1}{(m+n)!} x^m \otimes y^n \dots \text{ does not simplify.}$$

Take $M = [x, y]$

$$y // . y \mapsto e^{\text{ad}_M}(y) =$$

$$= \cancel{y} + \cancel{[x, y], y} + \frac{1}{2} \cancel{[[x, y], [x, y], y]} + \boxed{[[x, [x, y], y]], y} + \dots$$

not the same coefficient!

$$e^{\text{ad}_M}([x, y], y) =$$

$$= \cancel{y} + \cancel{[x, y], y} + \frac{1}{2} \left(\boxed{[[x, [x, y], y]], y} - \cancel{[[x, y], [x, y], y]} \right)$$