

1re

MATHÉMATIQUES

Enseignement de Spécialité

Exponentielle : $\exp(x)$

Correction

 www.freemaths.fr

SIMPLIFICATIONS DE e^{\dots}

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CORRECTION

Simplifions au maximum les expressions suivantes:

1. $A = 1 - ((e^{\frac{3}{2}}) \times e^{-3x+7})^2 \times e^3$:

$$\begin{aligned} A &= 1 - (e^{\frac{3}{2} - 3x + 7})^2 \times e^3 = 1 - (e^{(-3x + \frac{17}{2})})^2 \times e^3 \\ &= 1 - e^{(2x(-3x + \frac{17}{2}))} \times e^3 \\ &= 1 - e^{(-6x + 17)} \times e^3 \\ &= 1 - e^{(-6x + 17 + 3)}. \end{aligned}$$

D'où: $A = 1 - e^{-6x+20}$.

2. $B = (e^{x+3})^4 \times (e^{x+6} - e^{-3x})$:

$$\begin{aligned} B &= (e^{(4x(x+3))}) \times (e^{x+6} - e^{-3x}) = e^{(4x+12)} \times (e^{x+6} - e^{-3x}) \\ &= (e^{(4x+12)} \times e^{x+6}) - (e^{(4x+12)} \times e^{-3x}) \\ &= e^{(4x+12+x+6)} - e^{(4x+12-3x)}. \end{aligned}$$

D'où: $B = e^{5x+18} - e^{x+12}$.

$$3. C = e^{(3x+1)^2} \times e^{-6x} - 4 e^{-x+9}.$$

$$C = e^{(9x^2+1+6x)} \times e^{-6x} - 4 e^{-x+9} = e^{(9x^2+1+6x-6x)} - 4 e^{-x+9}.$$

$$\text{D'où: } C = e^{9x^2+1} - 4 e^{-x+9}.$$