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Spé Maths

Terminale

Exponentielle $\exp(x)$



CORRIGÉ DE L'EXERCICE

SIMPLIFICATIONS DE e^{\dots}

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CORRECTION

Simplifions au maximum les expressions suivantes:

1. $e^{1-x} \times e^{3x-2}$.

$$e^{1-x} \times e^{3x-2} = e^{(1-x+3x-2)}$$

D'où: $e^{1-x} \times e^{3x-2} = e^{2x-1}$.

2. $e^{2x} \times e^{3-5x} \times e$:

$$e^{2x} \times e^{3-5x} \times e = e^{2x} \times e^{3-5x} \times e^1 = e^{(2x+3-5x+1)}$$

D'où: $e^{2x} \times e^{3-5x} \times e = e^{-3x+4}$.

3. $(e^x)^2 \times e^{7+4x}$.

$$(e^x)^2 \times e^{7+4x} = e^{(2 \times x)} \times e^{7+4x} = e^{(2x+7+4x)}$$

D'où: $(e^x)^2 \times e^{7+4x} = e^{6x+7}$.

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

$$(e^{2x})^3 \times e^{-3} = e^{(3 \times 2x)} \times e^{(-3)} = e^{(3 \times 2x - 3)}$$

D'où: $(e^{2x})^3 \times e^{-3} = e^{6x-3}$.

$$5. \frac{(e^{-x})^3}{e^{x+4}} \times e^{-6}:$$

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

$$\text{D'où: } \frac{(e^{-x})^3}{e^{x+4}} \times e^{-6} = e^{-4x-10}.$$

$$6. \frac{e^{3x} \times e^{6x}}{e \times e^{4x+3}} \times e^{-5}:$$

$$\frac{e^{3x} \times e^{6x}}{e \times e^{4x+3}} \times e^{-5} = \frac{e^{3x} \times e^{6x} \times e^{(-5)}}{e^1 \times e^{4x+3}} = e^{3x} \times e^{6x} \times e^{(-5)} \times e^{(-1)} \times e^{-(4x+3)} = e^{(3x+6x-5-1-4x-3)}.$$

$$\text{D'où: } \frac{e^{3x} \times e^{6x}}{e \times e^{4x+3}} \times e^{-5} = e^{5x-9}.$$