

Fonction exponentielle

Série 2

Activités mentales et automatismes en classe de première
IREM de Clermont-Ferrand

Propriétés algébriques

Simplifier chaque expression
en utilisant les propriétés
algébriques de l'exponentielle.

Question 1

$$e^3 \times e^4 = \dots$$

Question 2

$$e^4 \times e^{-4} = \dots$$

Question 3

$$(e^4)^3 \times e^4 = \dots$$

Question 4

$$\frac{e^3 \times e^{-4}}{e^{-3}} = \dots$$

Question 5

$$\frac{e^4 - e^3}{e^2 \times e} = \dots$$

Question 6

$$(2 + e^{0,3}) \times (2 - e^{0,3}) = \dots$$

Question 7

$$\frac{e^{x-1}}{e^{x+1}} = \dots$$

Question 8

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

Question 9

$$\frac{e^{2x} - 1}{e^x} = \dots$$

Question 10

$$\frac{e^x + x}{e^{-x}} = \dots$$

Correction

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Question 1

$$e^3 \times e^4 = \dots$$

Question 1

$$e^3 \times e^4 = \dots$$

$$e^3 \times e^4 = e^7$$

Question 2

$$e^4 \times e^{-4} = \dots$$

Question 2

$$e^4 \times e^{-4} = \dots$$

$$e^4 \times e^{-4} = e^0 = 1$$

Question 3

$$(e^4)^3 \times e^4 = \dots$$

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$$(e^4)^3 \times e^4 = \dots$$

$$(e^4)^3 \times e^4 = e^{12} \times e^4 = e^{16}$$

Question 4

$$\frac{e^3 \times e^{-4}}{e^{-3}} = \dots$$

Question 4

$$\frac{e^3 \times e^{-4}}{e^{-3}} = \dots$$

$$\frac{e^3 \times e^{-4}}{e^{-3}} = \frac{e^{-1}}{e^{-3}} = e^2$$

Question 5

$$\frac{e^4 - e^3}{e^2 \times e} = \dots$$

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$$\frac{e^4 - e^3}{e^2 \times e} = \dots$$

$$\frac{e^4 - e^3}{e^2 \times e} = \frac{e^3(e - 1)}{e^3} = e - 1$$

Question 6

$$(2 + e^{0,3}) \times (2 - e^{0,3}) = \dots$$

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$$(2 + e^{0,3}) \times (2 - e^{0,3}) = \dots$$

$$\begin{aligned}(2 + e^{0,3}) \times (2 - e^{0,3}) &= 2^2 - (e^{0,3})^2 \\ &= 4 - e^{0,6}\end{aligned}$$

Question 7

$$\frac{e^{x-1}}{e^{x+1}} = \dots$$

Question 7

$$\frac{e^{x-1}}{e^{x+1}} = \dots$$

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

Question 8

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

Question 8

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

$$\begin{aligned}(e^{x+1})^2 \times e^{-2x} &= e^{2(x+1)-2x} \\ &= e^2\end{aligned}$$

Question 9

$$\frac{e^{2x} - 1}{e^x} = \dots$$

Question 9

$$\frac{e^{2x} - 1}{e^x} = \dots$$

$$\frac{e^{2x} - 1}{e^x} = \frac{e^{2x}}{e^x} - \frac{1}{e^x} = e^x - e^{-x}$$

ou

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

Question 10

$$\frac{e^x + x}{e^{-x}} = \dots$$

Question 10

$$\frac{e^x + x}{e^{-x}} = \dots$$

$$\frac{e^x + x}{e^{-x}} = e^{2x} + xe^x$$

Fin

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