

Corrigés des exercices donnés pour le vendredi 03 avril 2020

Exercice 37 p. 190

$$A = \exp(3x) \times \exp(-6x + 1) = \exp(3x + (-6x + 1)) = \exp(3x - 6x + 1) = \exp(-3x + 1)$$

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

Exercice 38 p. 190

$$A = \frac{\exp(2x+6)}{\exp(-3x+1)} = \exp(2x + 6 - (-3x + 1)) = \exp(2x + 6 + 3x - 1) = \exp(5x + 5)$$

$$\begin{aligned} B &= \frac{\exp(x^2 + 1)}{\exp(x(x + 1))} = \exp(x^2 + 1 - (x(x + 1))) = \exp(x^2 + 1 - (x^2 + x)) = \exp(x^2 + 1 - x^2 - x) \\ &= \exp(1 - x) \end{aligned}$$

Exercice 39 p. 190

$$A = \frac{4}{\exp(-2x)} = 4 \times \frac{1}{\exp(-2x)} = 4 \exp(2x)$$

$$B = \frac{1 - \exp(2x)}{1 + \exp(x)} = \frac{1 - \exp(x + x)}{1 + \exp(x)} = \frac{1^2 - (\exp(x))^2}{1 + \exp(x)} = \frac{[1 - \exp(x)][1 + \exp(x)]}{1 + \exp(x)} = 1 - \exp(x)$$

Exercice 40 p. 190

1. $\exp(2) \times \exp(3) = \exp(2 + 3) = \exp(5)$
2. $\exp(15) = \exp(5 \times 3) = \exp(5) \times \exp(5) \times \exp(5) = (\exp(5))^3$
3. $\exp(-5) = \frac{1}{\exp(5)}$
4. $\exp(-10) = \frac{1}{\exp(10)} = \frac{1}{\exp(2 \times 5)} = \frac{1}{(\exp(5))^2}$

Exercice 43 p. 190

1. $A = e^x(e^x + 5) = e^x \times e^x + e^x \times 5 = e^{2x} + 5e^x$
2. $B = e^{-x}(e^x - 2) = e^{-x} \times e^x - e^{-x} \times 2 = e^0 - 2e^{-x} = 1 - 2e^{-x}$
3. $C = e^{2x}(e^x - e^{-x}) = e^{2x} \times e^x - e^{2x} \times e^{-x} = e^{2x+x} - e^{2x-x} = e^{3x} - e^x$

Exercice 45 p. 190

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

Exercice 47 p. 190

1. $A = 10e^x - 5xe^x = 2 \times 5e^x - x \times 5e^x = 5e^x(2 - x)$
2. $B = 2xe^{-x} + 3e^{-x} = e^{-x}(2x + 3)$
3. $C = e^{2x} - 4e^x = e^x \times e^x - 4e^x = e^x(e^x - 4)$
4. $D = -3xe^{0,4x} - 2e^{0,4x} = e^{0,4x}(-3x - 2)$

Exercice 49 p. 190

1. $A = e^{2x} + 2e^x + 1 = (e^x)^2 + 2 \times e^x \times 1 + 1^2 = (e^x + 1)^2$
2. $B = 9e^{2x} - 6e^x + 1 = (3e^x)^2 - 2 \times (3e^x) \times 1 + 1^2 = (3e^x - 1)^2$
3. $C = e^{2x} - 16 = (e^x)^2 - 4^2 = (e^x - 4)(e^x + 4)$
4. $D = e^{6x} - 25 = (e^{3x})^2 - 5^2 = (e^{3x} - 5)(e^{3x} + 5)$