

Remédiation 4

exo 1 : 1) $e^{2x} e^{1-2x} = e^{2x+1-2x} = e^1 = e$

2) $(e^{2x-1})^2 e^{3x+4} = e^{2(2x-1)} e^{3x+4} = e^{4x-2+3x+4} = e^{7x+2}$

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

4) $\frac{e^{3x}}{e^{-x}(e^{-3x})^2} = \frac{e^{3x}}{e^{-x} e^{-6x}} = \frac{e^{3x}}{e^{-7x}} = e^{3x-(-7x)} = e^{10x}$

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

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

exo 5 : 1) $3\ln(2) - \ln(16) + \ln(4) = 3\ln(2) - \ln(2^4) + \ln(2^2)$
 $= 3\ln(2) - 4\ln(2) + 2\ln(2) = \ln(2)$

2) fait en classe de 2 manières → à refaire si besoin

3) $\ln(49) - \ln(\sqrt{7}) = \ln(7^2) - \frac{1}{2}\ln(7) = \frac{3}{2}\ln(7) = \ln(7^{3/2}) = \ln(7\sqrt{7})$

exo 7 : 1) $\exp\left(\frac{1}{2}\ln(4)\right) = \exp(\ln(\sqrt{4})) = \sqrt{4} = 2$

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

3) $\exp\left(\frac{1}{2}\ln(\sqrt{e^x})\right) = \exp(\ln(\sqrt{\sqrt{e^x}})) = \sqrt{\sqrt{e^x}} = (e^x)^{1/2})^{1/2} = e^{x/4}$