**Submit your work on Catcourses by March 3rd at 11:59pm**

Please be aware that in this homework, your approach and your justifications will be given **a lot** more importance than your final results. This means that you should think about how you will present and explain your work so that what you turn in makes sense, even if it is read by someone unfamiliar with the problem. This is a good training for your final report project.
**Read entirely the homework assignment first !**

**Individual portion**

1. Consider the function
$$f(x,t) = \frac{e^{-(x-\alpha t)^2/cDt}}{\sqrt{c\pi Dt}}$$
   with some constant $c > 0$ and $\alpha > 0$. This function is solution to the advection-diffusion equation of the form $f_t = Af_{xx} - Bf_x$. Determine $A$ and $B$.

2. Show that $\displaystyle\int_{-\infty}^{\infty} \frac{e^{-\frac{x^2}{L}}}{\sqrt{\pi L}} \, dx = 1$. What do you deduce for $f$ ?

3. Submit all your answers **in a single .pdf** on Catcourses your answers under the assignment `Homework 4 (individual)`.