# Homework 0
Due Wednesday by class

Reading: Please read the excerpt "Principle 5 Retrieval: Test to Learn" from Scott Young's book *Ultralearning* before Friday's class:

faculty.bard.edu/hhaggard/teaching/phys321Sp20/homework/YoungCh8.pdf.

There's no need to submit the following problem, but I thought you might appreciate the practice:

1. The fantastic blog *F&#k Yeah Fluid Dynamics* (fyfluiddynamics.com/) has wonderful images and videos of every sort of fluid phenomenon. When two layers of a fluid are moving at different speeds the fluid in between is subject to a *shearing transformation*. Check out the simulation of this here, a beautiful physical example in this shot of Jupiter, and a photograph of clouds doing it too. Before the fluid starts turning over on itself shear transformations are well modeled by a linear transformation.
   (**a**) Find a matrix representation of the shear transformation in this picture:
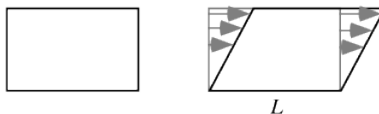
   (How drastically the transformation shears the rectangle is up to you.)

   (**b**) Is a shear transformation an example of an orthogonal transformation? Why or why not?

I'll post a solution of it.