Exercise No. 1:

A. Determine the specific weight of a diesel fuel knowing that its density d=0.85.

B. Calculate the density (ω), the density (ρ) and the density (d) of a volume $V = 6\ m^3$ of oil weighs $P = 47$ kN.

vs. The viscosity of water at 20°C is about 0.01 Poise. Express the kinematic viscosity υ in SI.

D. Calculate the weight P_0 of a volume V=3 liters of industrial oil having a density d=0.92.

Exercise No. 2:

The viscosity of water at 20°C is 0.01008 poise.

a) Calculate the viscosity in Pa · s.

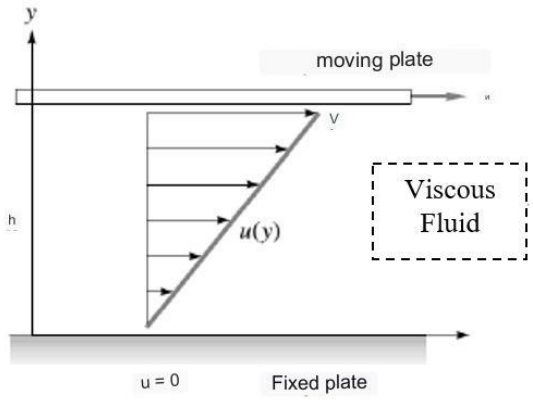
b) If the density at 20°C is 0.998, calculate the value of the Kinematic viscosity in m^2/s.

Exercise No. 3:

A fuel of dynamic viscosity $\mu = 0.6 \cdot 10^{-3}\ Pa \cdot s$ is brought to a temperature $T = 20°\ C$. Calculate its kinematic viscosity υ expressed in stocks knowing that its density is $d = 0.76$.

Exercise No. 4:

Suppose the fluid being sheared in Figure 1 is SAE 30 oil with a viscosity of μ = 0,29 kg/(m·s) à 20 °C. Calculate the shear stress in oil if the speed u = 3 m/s and h = 2 cm.



Exercise No. 5:

The velocity distribution of a Newtonian fluid flow between two large parallel flats (see Figure 2) is given by the equation $u = 0{,}9144[1+ (y^2/ h^2)]$. The fluid has a viscosity of 1.915 Pl and h = 0.00508 m. Determine the shearing stress acting on the upper wall.