Name: …… Class: 58NK; TLU ID #: ……..

Chapter 1: Analysis of Pipeline and Pipe-Network

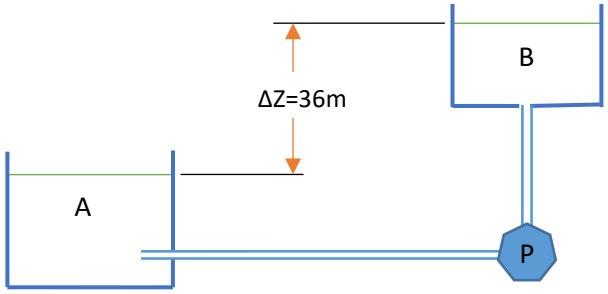
HOMEWORK ASSIGNMENT 1

Due in Class on Saturday, June 13, 2020

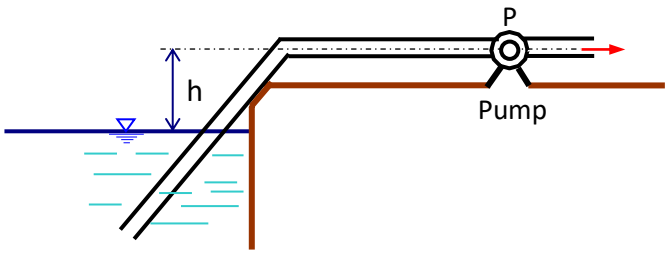
- *Read* chapters **3** in Houghtalen et al (2010).
- *Work and turn in* problem **3.11.10** in Houghtalen et al (2010) and **3 problems** given below:

1. Water is to be pumped through 1650 m of pipe from reservoir A to reservoir B at a rate of 80 *l/s*, as shown in figure. Entrance loss coefficient is 0.8. If the pipe is cast iron (ε = 0.26 mm) of diameter 16 cm and the pump is 75 percent efficient, what is the input power required?

   Dynamic viscosity of water is $1.01*10^{-6}$ m^2/s.



2. A 250-mm-diameter pipeline is 4.7 km long, as shown in figure below. Friction factor of pipe is 0.025. When pumping 100 *L/s* of water through it, with a total actual lift of h = 10.5 m, how much power is required? The pump efficiency is 75%. All minor head losses are negligible.



3. Water at 60°C flows in a straight 20-mm-diameter pipe (*e* = 0.06 mm) between points *A* and *B* 100 m apart. At *A* the elevation of the pipe is 54.1 m, and the pressure is 88.7 kPa. At *B* the elevation of the pipe is 52.0 m, and the pressure is 91.8 kPa. Compute the flow rate as accurately as you can.