1. Select the pump speed with the highest efficiency from the pump I chart (figure 5.10 from your textbook) based on the following conditions. A 1200 m-long (25-cm diameter) pipeline connects two reservoirs with an elevation difference of 32 m. Minor losses include entrance, exit and a glove valve (assume \( f = 0.02 \)). Determine the discharge, head, and efficiency for the pump.

2. Two identical pumps have the characteristic curves shown in figure 5.11. The pumps are connected in series and deliver water through a horizontal 15-cm diameter, 1000-m-long steel pipe into a reservoir in which the water level is 25 m above the pump. \( \nu = 1.00 \times 10^{-6} \text{ m}^2/\text{s} \) Neglect minor losses. (Prob. 5.5.2).
   a) Determine the discharge in the system.
   b) Determine the discharge when the two pumps are connected in parallel.

3. A pumping station is installed to deliver 10°C water from a reservoir to an elevated storage tank at a minimum required discharge of 300l/sec. The difference in elevations is 15 m, and a 1500-m long, wrought-iron pipe that is 40 cm in diameter is used. Select the pumps from the set given in the figure 5.10. Determine the discharge and total head at which the pumps operate (Prob. 5.5.3).

4. Surf on internet; find out what types of pumps commercially available for pumping water. Give example (Only 4 types of pump and just 2 line description about pump).