Calculate the flow rates in the pipes to within ± 5% and the pressure at each junction in the flow network shown below. The reservoir is at an elevation of 70 m relative to the datum, and all the pipes are at an elevation of 10 m. All the pipes are concrete, with absolute roughness of 1 mm. Neglect frictional losses due to flow changes at the junctions and the loss in the relatively short, large pipe from the reservoir to the network inlet.

In case the scanned image is difficult to read, I have repeated the geometric characteristics of the pipes below. The pipes are numbered 1-4 going clockwise in the upper loop, starting with the pipe at the top. The three remaining pipes (in the lower loop) are numbered 5-7 going clockwise, starting with the pipe on the lower right. The outflow rates are 0.02 m^3/s from each of the three outlets on the right and 0.01 m^3/s from the outlet on the lower left.

Pipe	*D* (mm)	*L* (m)
1	300	1000
2	300	500
3	200	1000
4	300	500
5	200	500
6	100	1000
7	700	500