1. A 40 ft-wide rectangular channel with a bottom slope of S=0.0025 and a Manning’s coefficient of n=0.035 is carrying a discharge of 1750 ft³/s.
   a. Determine the normal depth and Critical depth?
   b. Draw a specific energy curve.
   c. Calculate the alternate depth for the same specific energy of the normal depth?

2. A trapezoidal channel with bottom width 18-ft and side slope z=2, carries a discharge of 300 ft³/s. The natural channel (clean and straight) has a 0.04 ft/ft bottom slope. Calculate the depth of flow. (Use Table 6.1 for Manning’s coefficient, n)

3. At the uniform depth of 4 ft a trapezoidal channel has a bottom width of 5 ft and side slope z=1.0. The channel has n= 0.025 and slope S = 0.004. Determine the discharge and type of flow.

4. A 40-ft-wide rectangular channel carries 950 ft³/s at the depth of 6 ft. Is this flow sub-critical or super-critical? If n=0.025 what is the critical slope of this channel for this discharge? What channel slope must be provided to produce a uniform flow at the depth of 6-ft?