**Problem:** *Water Balance for the Flood Control Reservoir*

**Statement:**

A flood control reservoir has been releasing flows in anticipation of a forecast flood event. The reservoir storage is 490,000 m3 at 10 am. The latest forecast inflow (*Qi*) and the proposed releases (*Qo*) are provided below:

*t* *Qi* *Qo*

(h) (m3/s) (m3/s)

10 am 57 85

12 noon 74 79

2 pm 122 57

4 pm 164 34

6 pm 136 25

8 pm 102 23

Do the following:

1. Plot the inflow and outflow (in m3/s) versus time for the forecast flood event.
2. Compute change in reservoir storage (in m3) for each 2-h time step
3. Compute the reservoir storage (in m3) at each time (e.g., the times shown in the table above)

*Note:* The inflows and outflows are instantaneous rates at the time shown. You will need to use these instantaneous rates to estimate inflow and outflow flow **volumes** (in m3) for **each 2-h time step** (e.g., from 10 am to 12 noon, then from 12 noon to 2 pm, and so on). Ignore all other fluxes (e.g., precipitation, evaporation, etc) into and out of the reservoir.

**Solution:**