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 m^3 at 10 am. The latest forecast inflow (Q_i) and the proposed releases (Q_o) are provided below:

t (h)	Q_i (m^3/s)	Q_o (m^3/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:

a. Plot the inflow and outflow (in m^3/s) versus time for the forecast flood event.
b. Compute change in reservoir storage (in m^3) for each 2-h time step
c. Compute the reservoir storage (in m^3) 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 m^3) 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: