[mex112] **Balancing the water level in a cone**

Water flows into a cone-shaped container at a constant rate (volume per unit time) and evaporates at a rate proportional to the free surface area.

(a) Determine the equilibrium position of the water level, expressed as the volume V_{eq} at which the two processes are in balance.

(b) Determine whether or not that stationary state is asymptotically stable.

(c) Determine the time dependence of the volume if the container is empty at first.