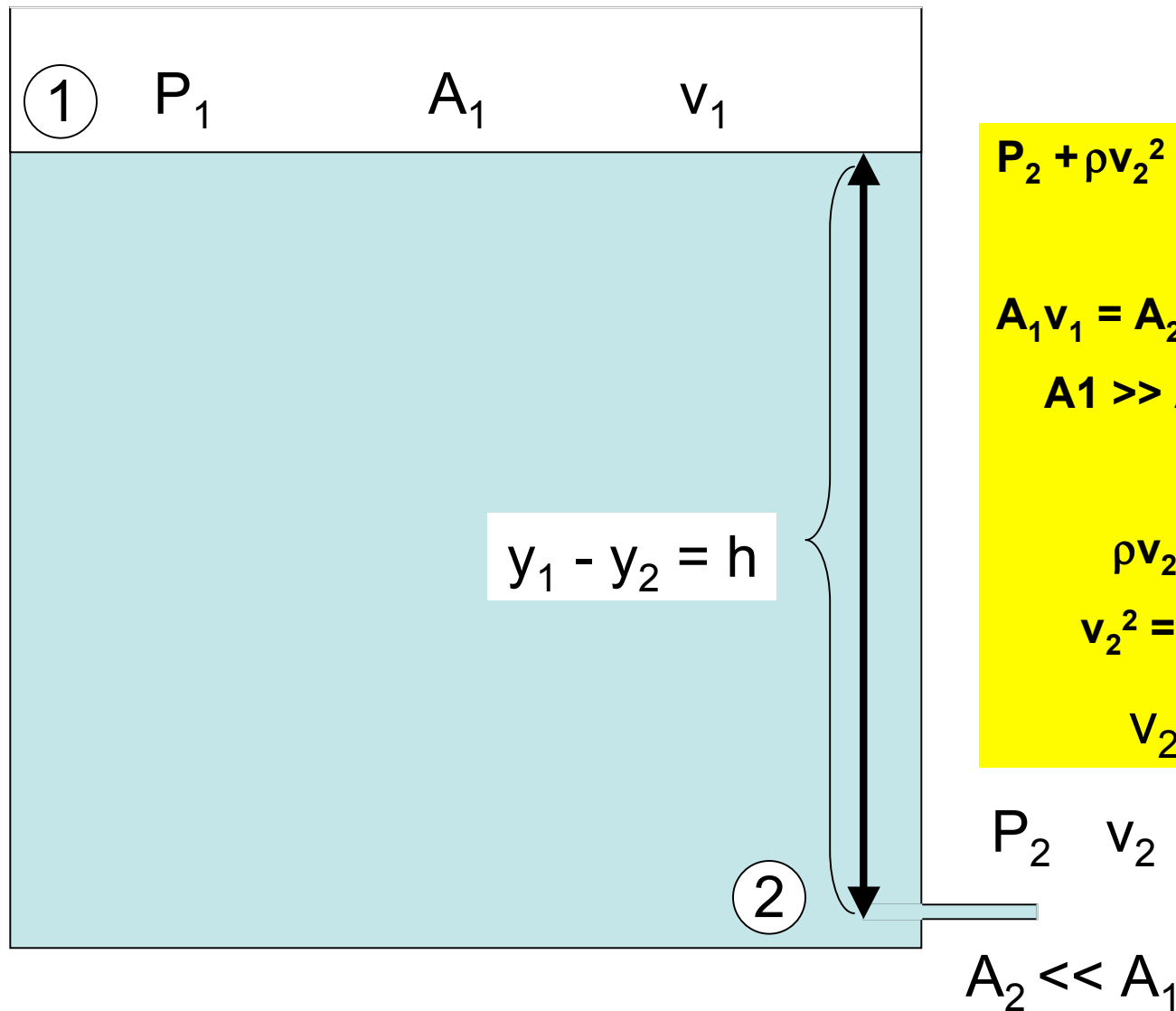


# Bernoulli's Law for Water Tank with a Small Spigot

*What is the exit speed of the water from the spigot?*



$$P_2 + \rho v_2^2 + \rho g y_2 =$$

$$P_1 + \rho v_1^2 + \rho g y_1$$

$$A_1 v_1 = A_2 v_2 \rightarrow v_1 = (A_2/A_1) v_2$$

$$A_1 \gg A_2 \rightarrow v_1 = 0$$

$$P_1 = P_2 = P_{\text{air}}$$

$$\rho v_2^2 + \rho g y_2 = \rho g y_1$$

$$v_2^2 = 2g(y_1 - y_2) = 2gh$$

$$v_2 = \sqrt{2gh}$$