Water is flowing in a fire hose with a velocity of 1.0 m/s and a pressure of 200000 Pa. At the nozzle the pressure decreases to atmospheric pressure (101300 Pa), there is no change in height. Use the Bernoulli equation to calculate the velocity of the water exiting the nozzle. The density of water is 1000 kg/m3 and gravity g is 9.8 m/s^2 .

$$\frac{1}{2}\rho v_1^2 + \rho g h_1 + p_1 = \frac{1}{2}\rho v_2^2 + \rho g h_2 + p_2$$

$$\frac{1}{2}\rho v_1^2 + p_1 = \frac{1}{2}\rho v_2^2 + p_2$$

$$v_2 = \sqrt{\frac{2}{\rho}\left(\frac{1}{2}\rho v_1^2 + p_1 - p_2\right)} = \sqrt{\frac{2}{1000}\left(\frac{1}{2}1000 + 200000 - 100000\right)} = 14 \text{ m/s}$$