



Conserved Energy 1 \rightarrow 2:

$$\Delta E_{\text{mech}} = \Delta K + \Delta U_g = 0$$

$$\frac{1}{2} m (v_2^2 - v_1^2) + m g (y_2 - y_1) = 0$$

$$v_2^2 - v_1^2 = -2g(y_2 - y_1)$$

$$v_2 = \sqrt{v_1^2 - 2g(y_2 - y_1)}$$

$$\underline{v_2 = 1.414 \text{ m/s}}$$