Crime Scene #2: Hotel Jumper

Walking

\[ V_{ix} = 1.3 \text{ m/s} \]
\[ V_{iy} = 0 \text{ m/s} \]
\[ \Delta y = -43.4 \text{ m} \]
\[ a_y = -9.8 \text{ m/s}^2 \]
\[ \Delta y = v_{iy} \Delta t + \frac{1}{2} a \Delta t^2 \]
\[ -43.4 = \frac{1}{2} (-9.8) \Delta t^2 \]
\[ \Delta t^2 = \frac{-43.4}{-9.8} \]
\[ \Delta t = \sqrt{8.84} \approx 2.9 \text{ sec} \]
\[ \Delta d_x = v_{ix} \cdot \Delta t \]
\[ \Delta d_x = 1.3 (2.9) \approx 3.77 \text{ m} \]

* This would be distance from the building if he committed suicide (assuming starting from rest/walking)

Running

\[ V_{ix} = 6.9 \text{ m/s} \]
\[ V_{iy} = 0 \text{ m/s} \]
\[ \Delta y = -43.4 \text{ m} \]
\[ a_y = -9.8 \text{ m/s}^2 \]
\[ \Delta y = v_{iy} \Delta t + \frac{1}{2} a \Delta t^2 \]
\[ -43.4 = \frac{1}{2} (-9.8) \Delta t^2 \]
\[ \Delta t^2 = \frac{-43.4}{-9.8} \]
\[ \Delta t = \sqrt{8.84} \approx 2.9 \text{ sec} \]
\[ \Delta d_x = V_{ix} \cdot \Delta t \]
\[ \Delta d_x = 6.9 (2.9) \approx 20.0 \text{ m} \]

* Distance if running

: He sprinted and jumped since the pool was 22m from the building; if he was running and jumped, he would have landed at 20.0m + 2.3m (being short) which would have landed him in the pool.