



$$2a_{m-1}d_{ij} = V_{m+1}^2 - V_m^2 \quad \Rightarrow \quad V_m = \sqrt{V_{m+1}^2 - 2a_{m-1}d_{ij}}$$

$$V_{m+1} = V_m + at$$

$$t = \frac{V_{m+1} - \sqrt{V_{m+1}^2 - 2a_{m-1}d_{ij}}}{a_{m-1}}$$

$$\begin{aligned} t^m &= t^{m+1} - t \\ &= t^{m+1} - \frac{V_{m+1} - \sqrt{V_{m+1}^2 - 2a_{m-1}d_{ij}}}{a_{m-1}} \end{aligned}$$