① (a) $t_i = 12:32 \qquad t_f = 1:43 \qquad \Rightarrow \quad \Delta t = 71 \, min$
$$= 1.18 \, hr$$

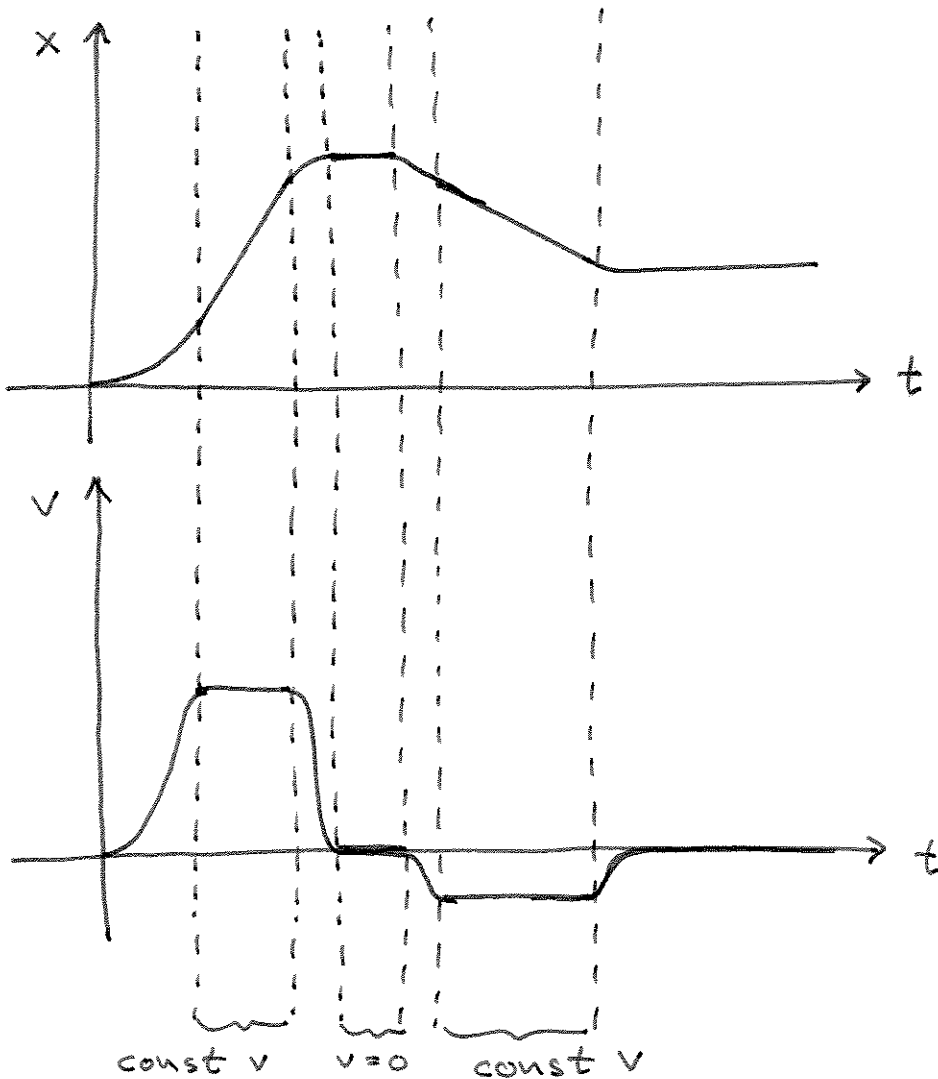$x_i = 14 \, mi \qquad x_f = 81 \, mi \qquad \Rightarrow \quad \Delta x = 67 \, mi$

$$v = \frac{\Delta x}{\Delta t} = \frac{67 \, mi}{1.18 \, hr} = 57 \, mi/hr$$

(b) $x_i = 81 \, mi$

$t_i = 1:43 \qquad t_f = 2:00 \qquad \Rightarrow \quad \Delta t = 17 \, min = 0.28 \, hr$

$x_f = x_i + v \, \Delta t$

$$= 81mi + 57 \, \frac{mi}{hr} \cdot 0.28 \, hr$$

$$= 97 \, mi \quad marker$$

②



const v          v=0      const v

③ $\Delta y = \frac{1}{2} g \Delta t^2 = 4.9 \Delta t^2$

$\Delta t = 4s \implies \Delta y = 78m$

$\implies$ draw tower at least this high

← person
≈ 2m
high

- 90m
- 80m
- 70m
- 60m
- 50m
- 40m
- 30m
- 20m
- 10m
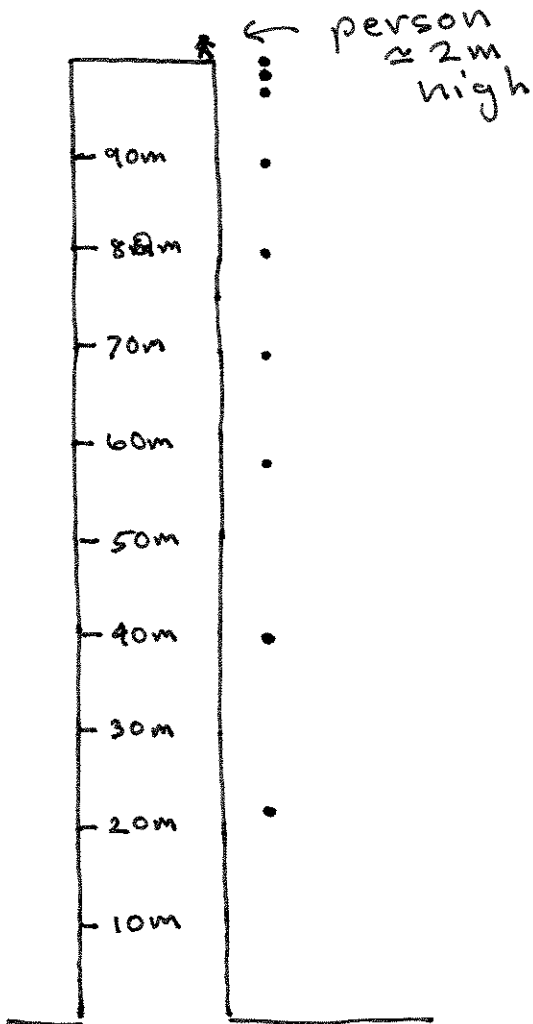
$\Delta t = 0.5s \implies \Delta y = 1.2$
$\Delta t = 1s \implies \Delta y = 4.9$
$\Delta t = 1.5s \implies \Delta y = 11$
$\Delta t = 2 \implies \Delta y = 20$
$\Delta t = 2.5 \implies \Delta y = 30$
$\Delta t = 3 \implies \Delta y = 44$
$\Delta t = 3.5 \implies \Delta y = 60$
$\Delta t = 4 \implies \Delta y = 78$