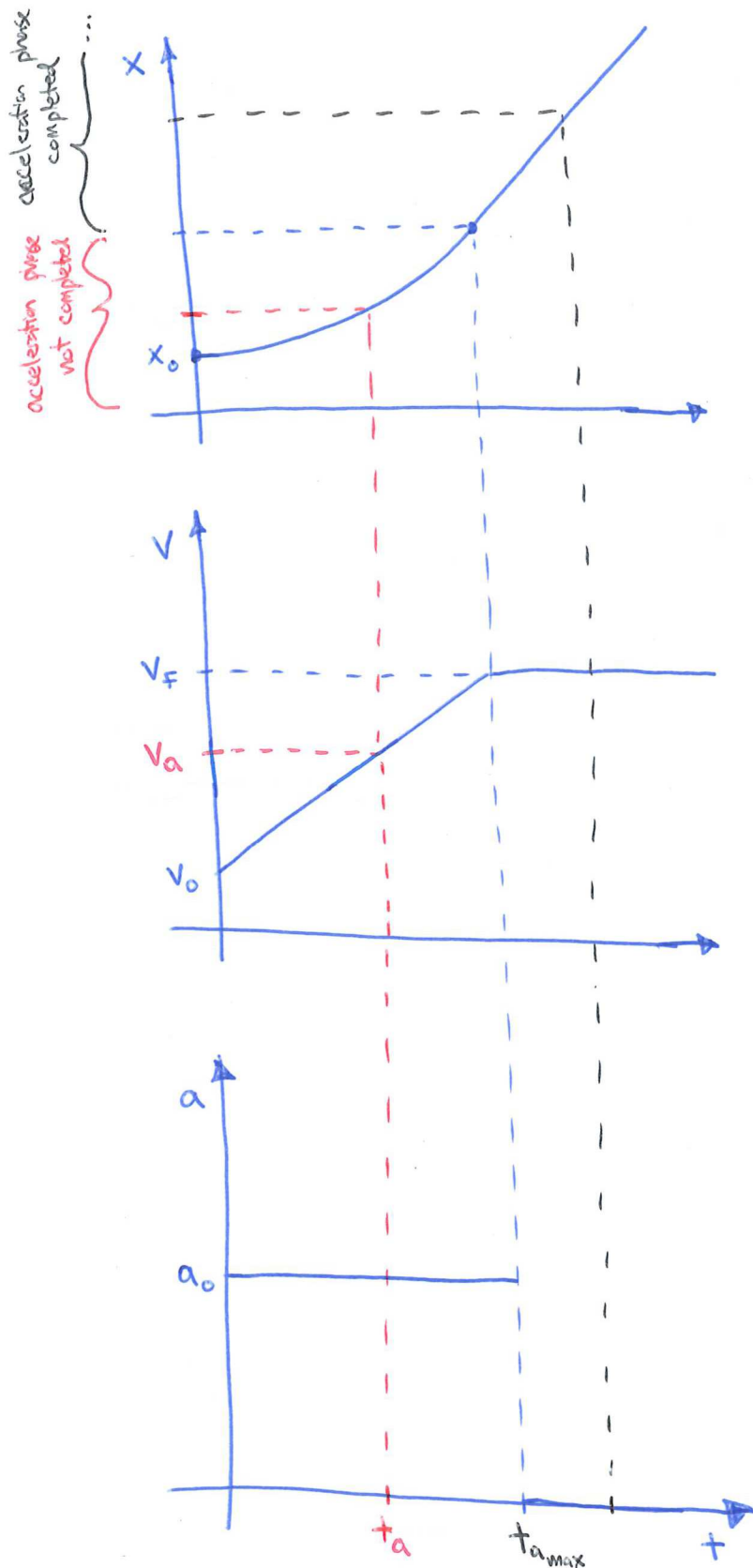


Motion (2 phases)



Kinematic equations:

$$x = x_0 + v_0 t + \frac{1}{2} a t^2$$

$$v^2 = v_0^2 + 2a(x - x_0)$$

$$v = v_0 + at$$

Acceleration Phase (not completed)

$$v_a = \sqrt{v_0^2 + 2a(x_f - x_0)}$$

$$t_a = (v_a - v_0) / a$$

Acceleration Phase (completed)

$$t_{a_{max}} = (v_F - v_0) / a$$

use minimum:

$$v_a = \min(v_a, v_F)$$

$$t_a = \min(t_a, t_{a_{max}})$$

convert to frames

$$f = \frac{1}{\Delta t}$$