M-GP General Physics Week 8 10/31

$+45\ m/s \quad -3.75\ m/s$

$41.25\ m/s \quad -3.75\ m/s$

$45\ m/s = v$

$\Downarrow$

$\triangleq = -3.25\ m/s^2$

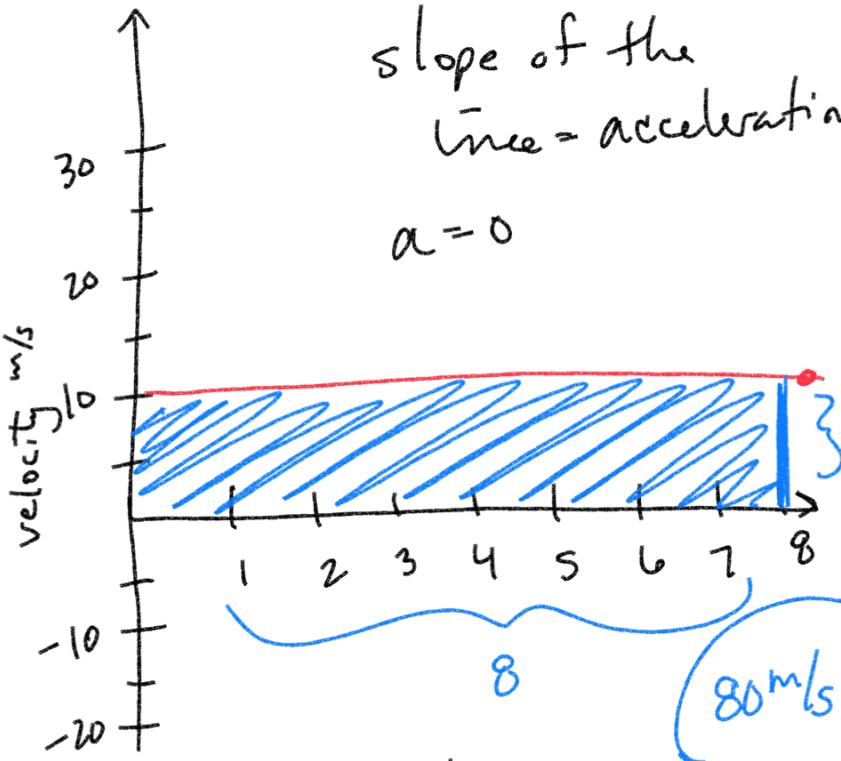
$t = 4s$

$$V_f = V_i + at$$

$$\downarrow$$

$$45\ m/s + (-3.75\ m/s^2)(4\ s)$$

$$45\ m/s + (-15\ m/s) = \boxed{30\ m/s}$$



slope of the line = acceleration

$a = 0$

Velocity vs Time

velocity = constant

$10\ m/s$

$(10\ m/s)(8\ s)$

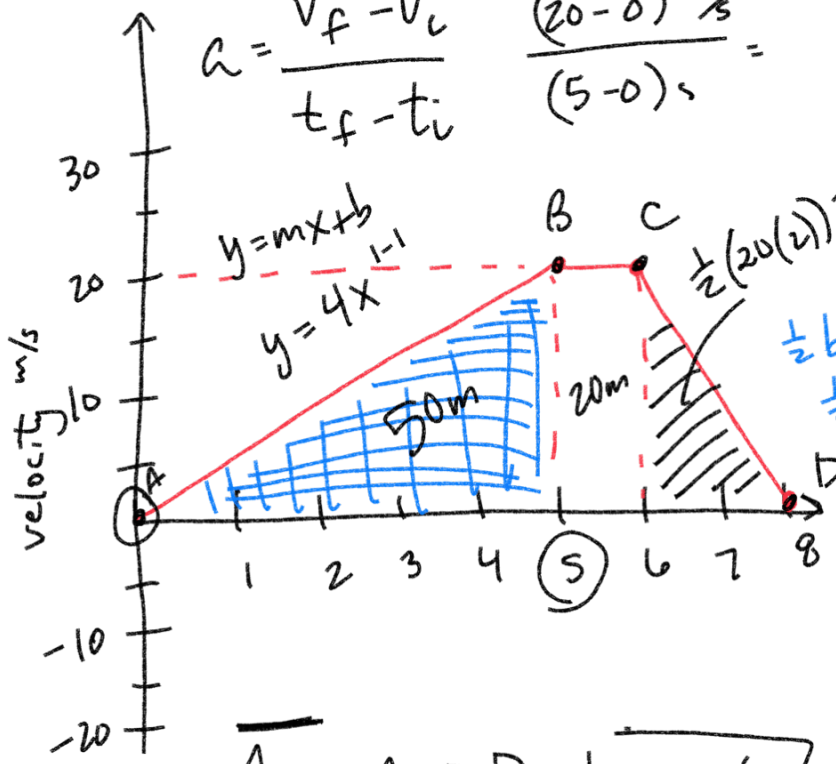
$80\ m/s$

$d = vt = (10\ m/s)(8\ s)$

$\boxed{80\ m/s}$

slope → acceleration

area underneath → velocity → displacement



$a = \frac{v_f - v_i}{t_f - t_i}$ $\frac{(20-0)\ m/s}{(5-0)\ s} =$

Acceleration $\boxed{4\ m/s^2}$

$A \to B$

Displacement

$\frac{1}{2}(20(2)) = 20m$

$\frac{1}{2}bh$

$\frac{1}{2}(5)(20)$

$\frac{1}{2}(100)$

$A \to B$ $\boxed{50m}$

Acc $B \to C$ $0\ m/s^2$

Disp $B \to C$ $20m$

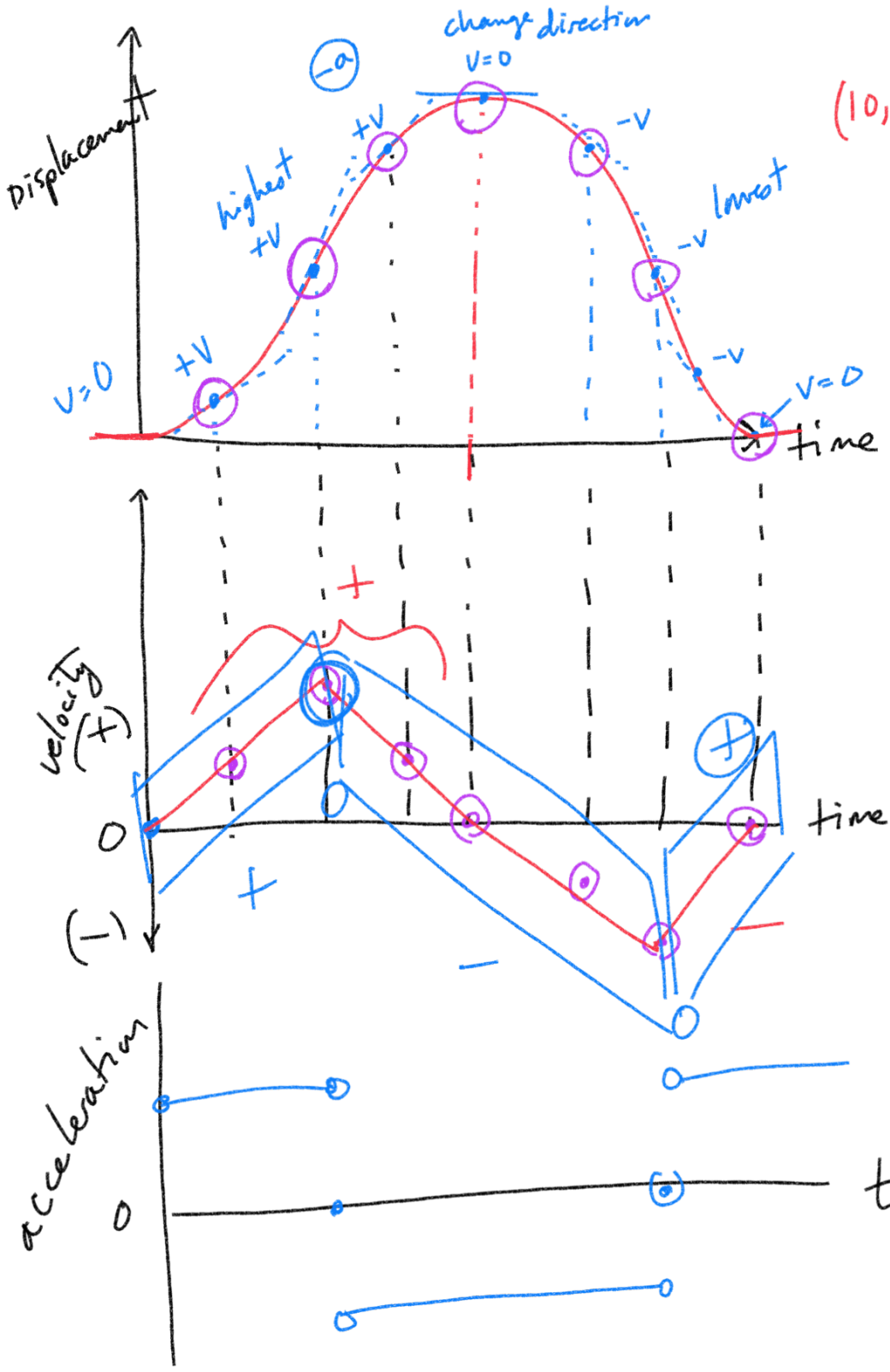
Acc $A \to D$ $\boxed{0\ m/s}$

tot disp $A \to D$

$50m + 20m + 20m = \boxed{90m}$

$y = \frac{4x^{1+1}}{1+1} = \frac{4x^2}{2} = 2x^2$

$2(5)^2 = 2(25) = 50$



(10, 20)

$-(x-10)^2+20$

$-(x^2-20x+100)+20$

$-x^2+20x-80$

$-2x+20$

$0 \longleftrightarrow 10$

Find v_f $\quad v_i = 28\ m/s$ $\quad a = 3.5\ m/s^2$ $\quad t = 5.0\ s$

$$v_f = v_i + at$$

$$28\ m/s + (3.5\ m/s^2)(5.0\ s)$$

$$28\ m/s + 17.5\ m/s = \boxed{45.5\ m/s}$$

$$\boxed{46\ m/s}$$

Find v_i $\quad v_f = 16\ m/s$ $\quad a = 1.5\ m/s^2$ $\quad t = 6.0\ s$

$$v_f = v_i + at \quad -at \quad -at$$

$$v_f - at = v_i$$

$$16\ m/s - (1.5\ m/s^2)(6.0\ s) = v_i$$

$$16\ m/s - 9.0\ m/s = \boxed{7.0\ m/s}$$

$$\bar{v} = \frac{v_f + v_i}{2}$$

$v_i = 22\ m/s$ $\quad v_f = 36\ m/s$

$$\frac{22\ m/s + 36\ m/s}{2} = \frac{58\ m/s}{2}$$

$$\boxed{29\ m/s}$$

$$x_f = x_i + \frac{1}{2}(v_i + v_f)t \qquad x_f = x_i + \bar{v}t$$

$x_i = 52\text{m}$ $\quad v_i = 8.5\text{m/s}$ $\quad v_f = 12.5\text{m/s}$ $\quad t = 8.0\text{s}$

$$x_f = x_i + \frac{1}{2}(v_i + v_f)t$$

$$52\text{m} + \frac{1}{2}(8.5\text{m/s} + 12.5\text{m/s})(8.0\text{s})$$

$$52\text{m} + \frac{1}{2}(21.0\text{m/s})(8.0\text{s})$$

$$52\text{m} + 84\text{m} = 136\text{m}$$

*

$$x_f = x_i + v_i t + \frac{1}{2}at^2 \;\&\; *$$

derivative

$$x_f = \cancel{x_i}^{\,0} + v_i t^{1-1} + \underbrace{\frac{1}{2}at}^{(2)-1}$$

$$v_f = v_i + at$$

$$a_f = @$$