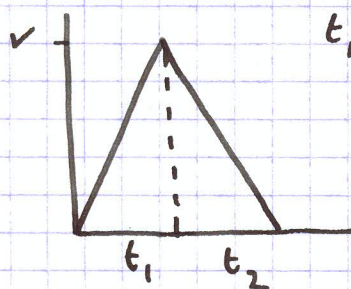


② Area under the graph - special case.

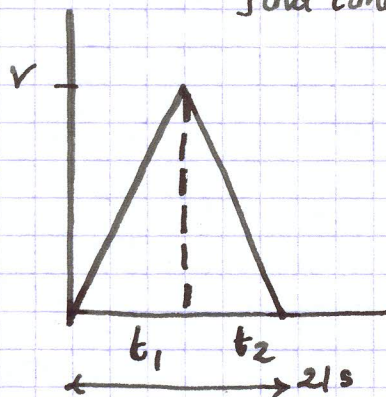
for an acceleration followed by an immediate deceleration the following holds:



$$t_1 : t_2 = a : d$$

where a is acceleration (t_1)
and d is deceleration (t_2)

Example 1. A car accelerates from rest at 2ms^{-2} to its maximum speed and then immediately decelerates at 5ms^{-2} to rest. The total time is 21 seconds. Find time for each part, maximum speed.



$$t_1 : t_2 = a : d$$

$$t_1 : t_2 = 5 : 2 \quad \text{find total}$$

$$t_1 : t_2 = \frac{5}{7} : \frac{2}{7}$$

$$\Rightarrow t_1 = \frac{5}{7} \times 21 = \boxed{15 \text{ sec}}$$

$$t_2 = \frac{2}{7} \times 21 = \boxed{6 \text{ sec}}$$

for max. speed $\rightarrow$ take acceleration

u 0
v ?
a 2
s
t 15

$$v = u + at$$

$$v = 0 + 2 \cdot 15$$

$$v = \boxed{30 \text{ ms}^{-1}}$$