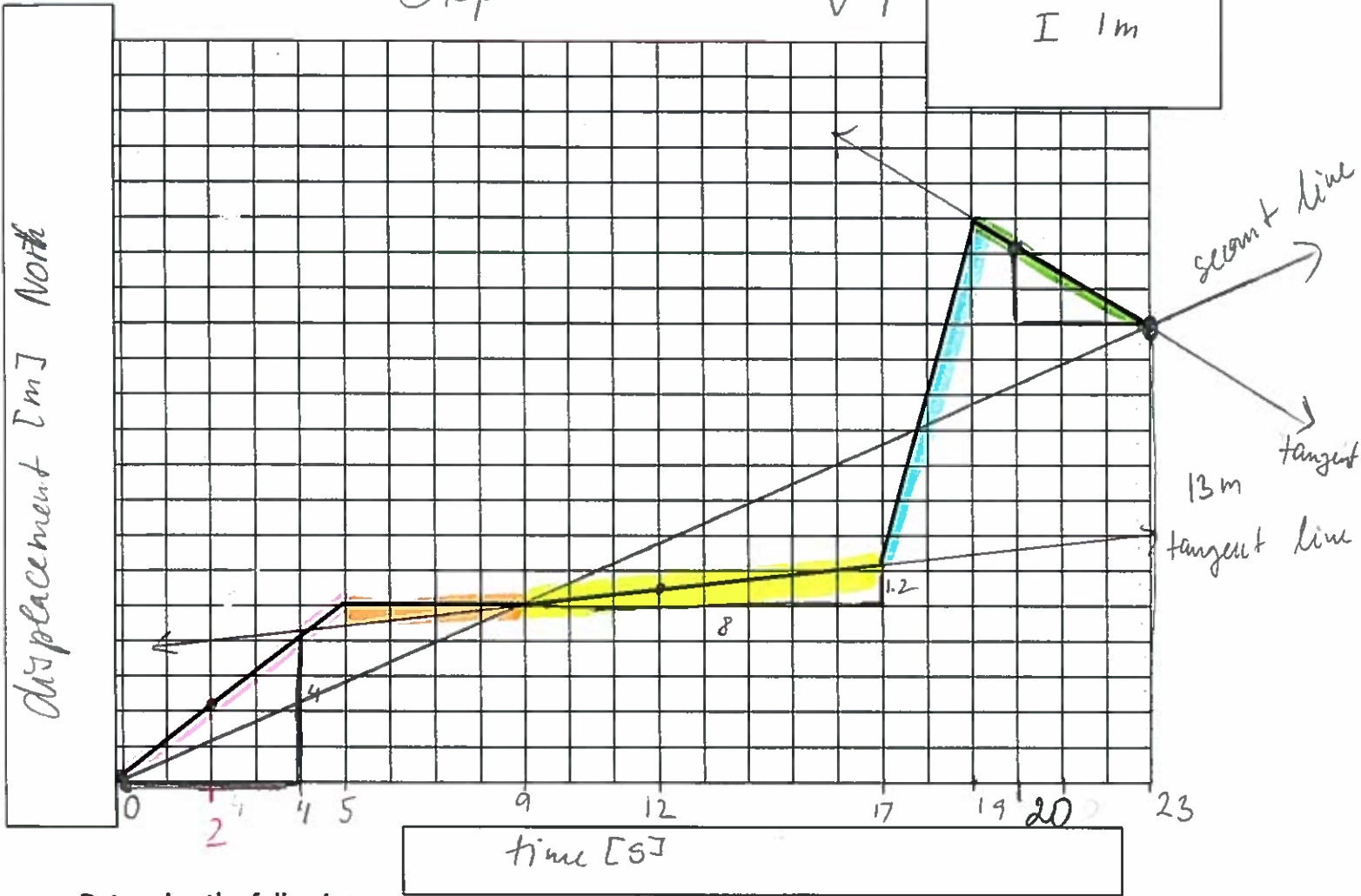


KEY

DETERMINING INSTANTANEOUS AND AVERAGE VELOCITY USING A GRAPH

Title: Displacement vs. time graph

Scale: H 1s
I 1m



Determine the following:

Length of the time interval	$\Delta t = 23s$
Time interval when the object is at rest	$t = [5, 9]s$
Average velocity for the first 4 seconds	$\vec{v}_{avg} = \frac{4}{4} = 1 m/s [N]$
Average velocity for the entire time interval	$\vec{v}_{avg} = \frac{13}{23} = 0.57 m/s [N]$
Instantaneous velocity for $t=12s$	$\vec{v}_{inst.} = \frac{1.2}{8} = 0.15 m/s [N]$
* Instantaneous velocity for $t=2s$	$\vec{v}_{inst} = \vec{v}_{avg}$ for $t = [0, 5]s = 1 m/s [N]$
Instantaneous velocity for $t=20s$	$\vec{v}_{inst} = -\frac{2.2}{3} = -0.77 m/s [South] = -0.77 m/s [N]$
Is the motion uniform or non-uniform?	non-uniform
Change in displacement	$\Delta d = d_f - d_i = 13 - 0 = 13 m [N]$

* Note: For a single line segment $\vec{v}_{inst} = \vec{v}_{avg}$ for the segment's time interval.