Assignment 1

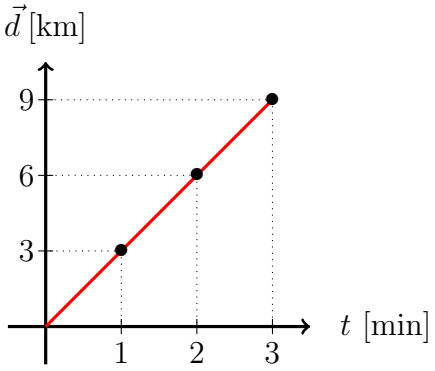
July 15, 2022

Q1 Use vector scale graphs to determine the total displacement:

(a) $\vec{\Delta}d_1 = 5m\ [W]$, $\vec{\Delta}d_2 = 3m\ [W]$

(b) $\vec{\Delta}d_1 = 7m\ [S]$, $\vec{\Delta}d_2 = 12m\ [N]$, $\vec{\Delta}d_1 = 5m\ [S]$

Q2 Determine the average velocity of the motion from the figure below:

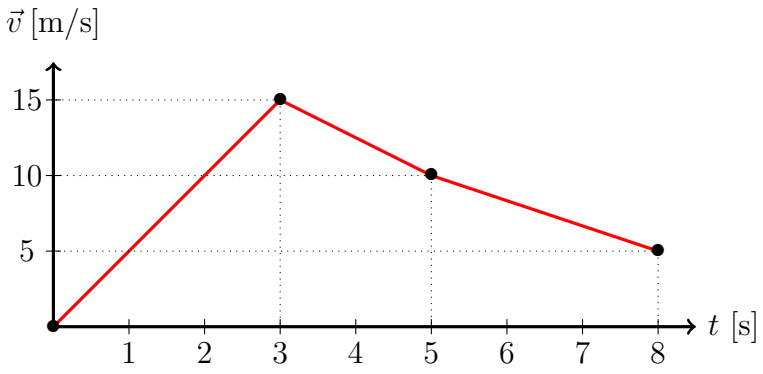


and change the unit to [m/s].

Q3 What is the velocity of an F-18 fighter jet that traveled 8.864 [km] southward in 0.297 minutes?

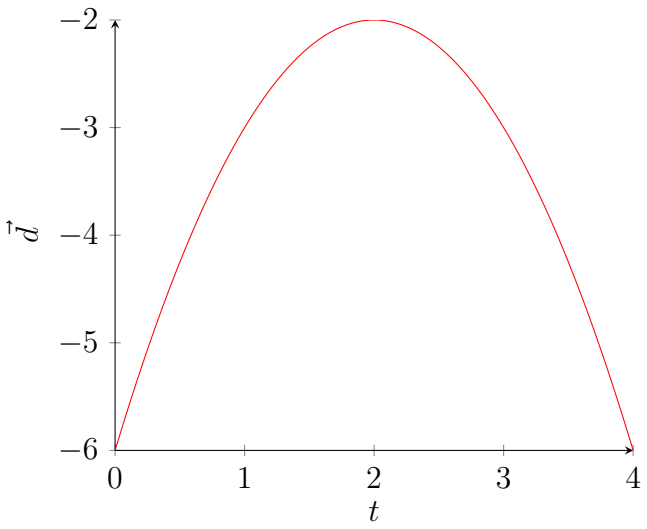
Q4 Determine the total displacement and average velocity of the motion illustrated below from:

- $t = 2\,\text{s}$ to $t = 6\,\text{s}$
- $t = 2\,\text{s}$ to $t = 6\,\text{s}$



Note: Positive is defined to be North.

Q5 Determine the type of the motion from graph below:



Hint: Look at the axis. Analyze the motion carefully. It's simpler than you think.

Bonus: A boat is traveling at 3.5 m/s[S] and experiencing an acceleration of 0.5 m/s^2[N].

(a) What will the final velocity of the boat be?

(b) What will the displacement of the boat be if it travels for 15 s?

Bonus: What is the instantaneous acceleration of the motion described below:

(a) $\vec{d}(t) = t^3 + 2t^2 + 5t + 7$

(b) $\vec{d}(t) = sin(3t)$