Assignment 1

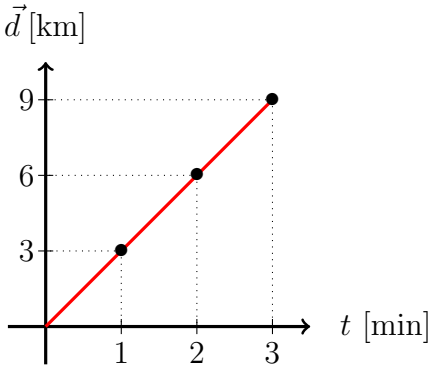
July 16, 2022

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:

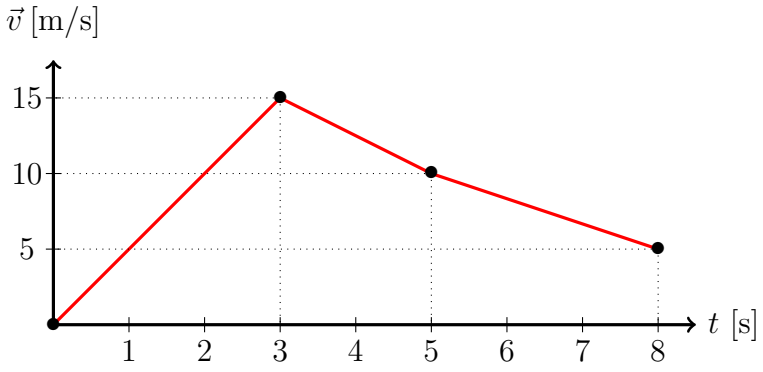


and change the unit to [m/s].

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

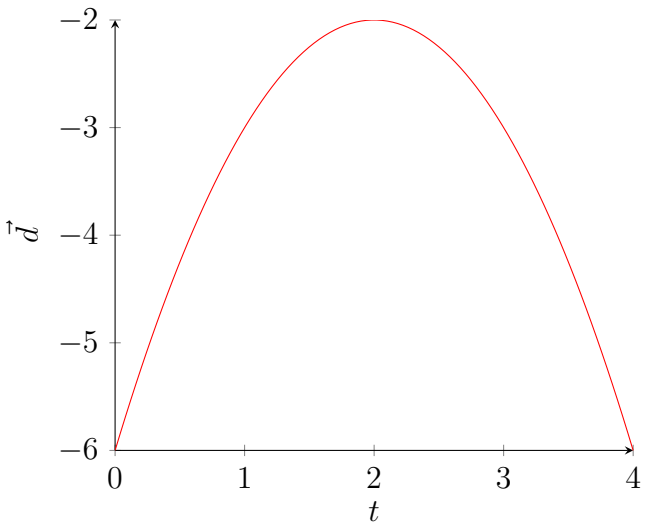
Q4 Determine the total displacement and average velocity of the motion illustrated below from:

- $t = 0\,\text{s}$ to $t = 8\,\text{s}$
- $t = 2\,\text{s}$ 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.

Q6 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?

(c) What will be the total distance traversed by the boat? (Hint: What would the boat's velocity/speed be when it turns?)

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

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

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