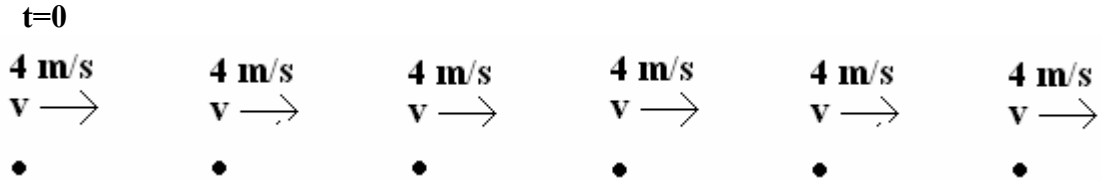


Relating Representations in Kinematics (RRK)

Question 1:

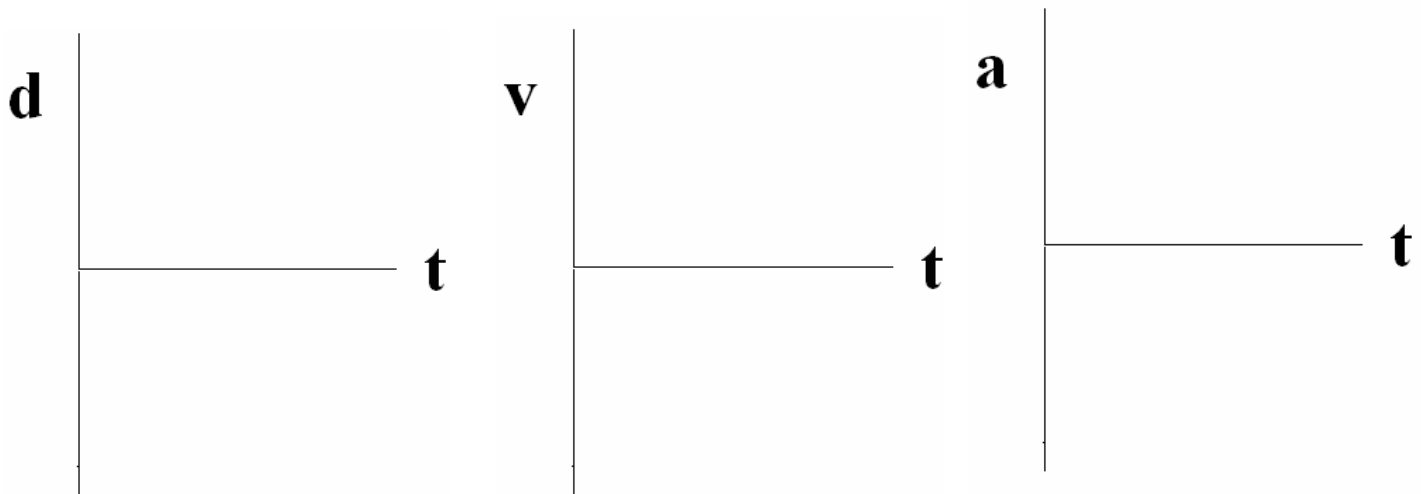
The following is a dot diagram of a person jogging:



a) Assuming the dots are taken after each second, what is the jogger's displacement? (Show all work)

b) Write a brief story about the motion of the jogger (what is she doing?). Make sure to include any quantities that are given in the previous representation:

c) *Using your verbal description*, sketch the position (start at the origin), velocity, and acceleration vs. time graphs for this motion. Make sure to include any quantities that are given in the previous representation:

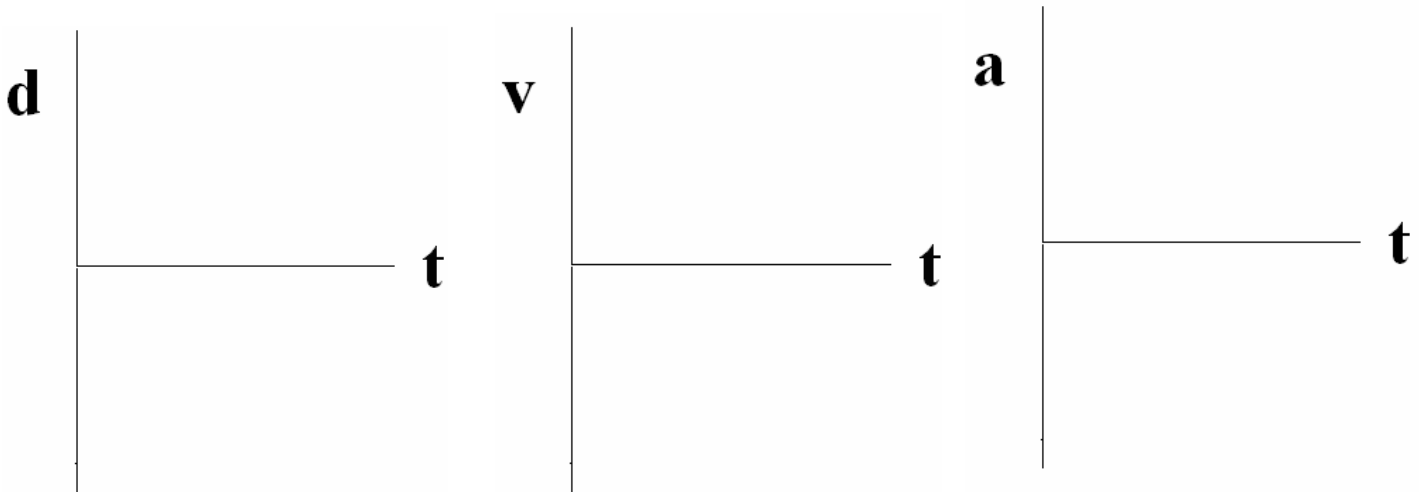


Question 2:

A car starts from rest and accelerates at a constant rate of 6 m/s/s until it reaches a speed of 30 m/s .

a) Draw a dot diagram to represent this motion. Assume the dots are taken after each second. Make sure to include velocity & acceleration vectors:

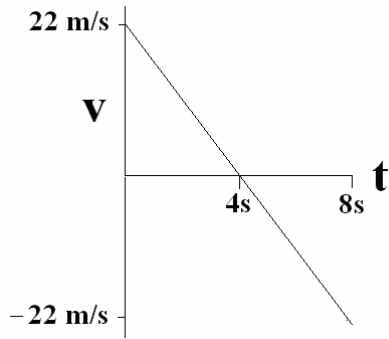
b) *Using your dot diagram*, sketch the position (start at the origin), velocity, and acceleration vs. time graphs for this motion. Make sure to include any quantities that are given in the previous representation:



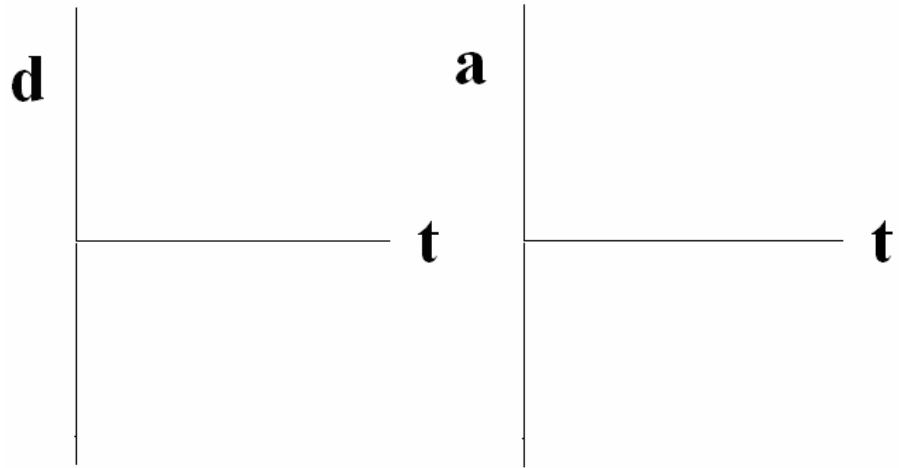
c) *Using your graphical description*, calculate the displacement of the car (Show all work):

Question 3:

Below is a velocity vs. time graph for a ball in motion:



a) Sketch (qualitatively) the position vs. time (start at the origin) and acceleration vs. time graphs for this motion:



b) Write a brief story about the motion of the ball (what is the ball doing?). Make sure to include any quantities that are given in the previous representation:

c) *Using your verbal description*, calculate the acceleration of the ball throughout the 8 seconds of motion (Show all work):

d) Draw a dot diagram to represent this motion. Assume the dots are taken after each second. Make sure to include velocity & acceleration vectors and any quantities that are given in the previous representation:

Question 4:

The following numerically represents the motion of a train:

$$v_i = -50 \text{ m/s}$$

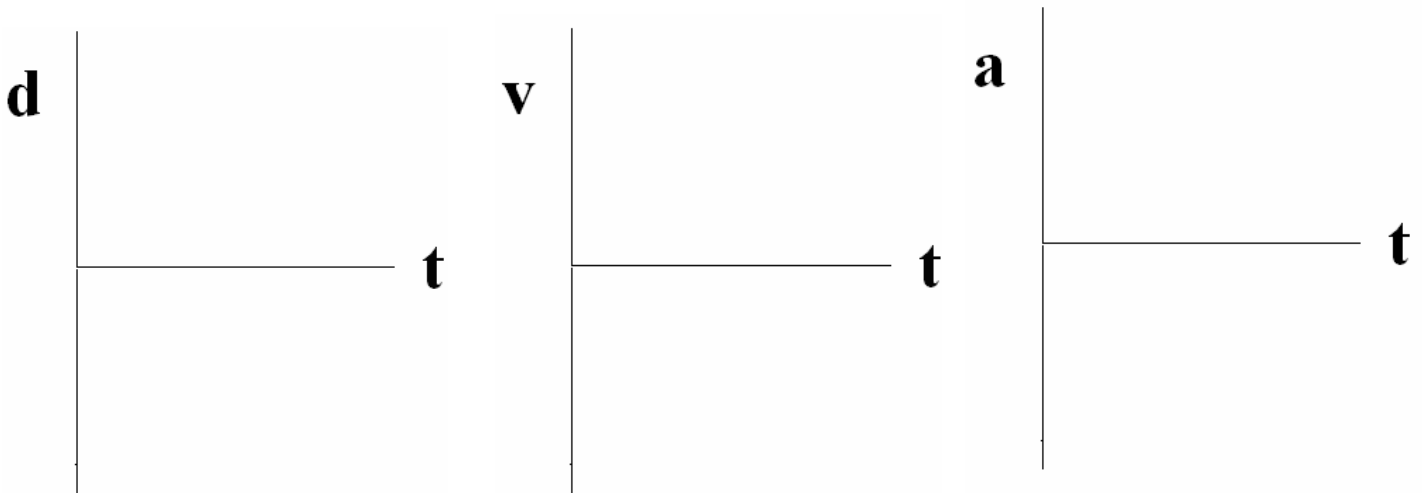
$$v_f = -25 \text{ m/s}$$

$$d = -150 \text{ m}$$

$$a = \text{constant}$$

a) Calculate the time of motion (Show all work):

b) Sketch the position (start at the origin), velocity, and acceleration vs. time graphs for this motion. Make sure to include any quantities that are given in the previous representation:



c) *Using your graphical description*, draw a dot diagram to represent this motion. Assume the dots are taken after each second. Make sure to include velocity & acceleration vectors and any quantities that are given in the previous representation (**right of the page is the positive direction**):

d) *Using your dot diagram*, write a brief story about the motion of the train (what is it doing?). Make sure to include any quantities that are given in the previous representation:
