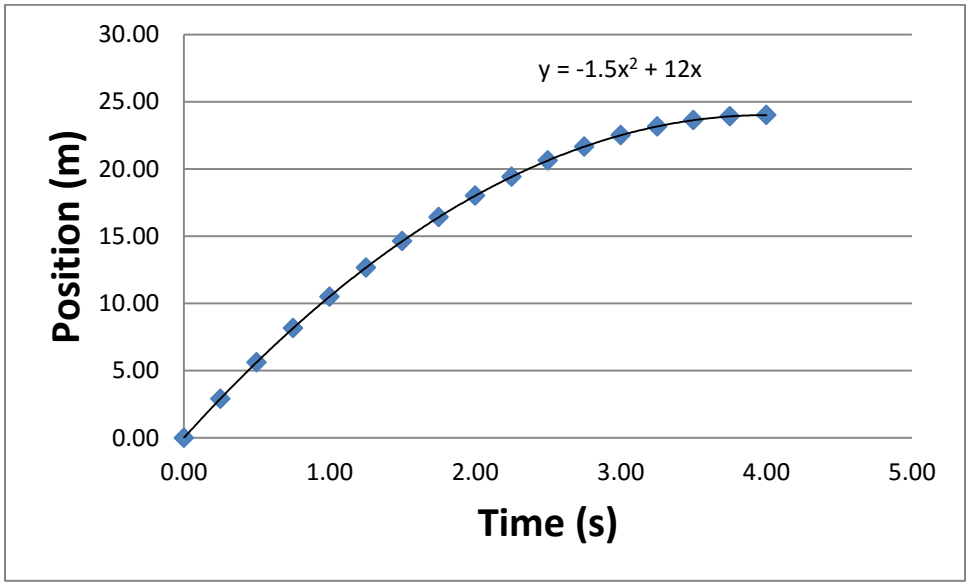
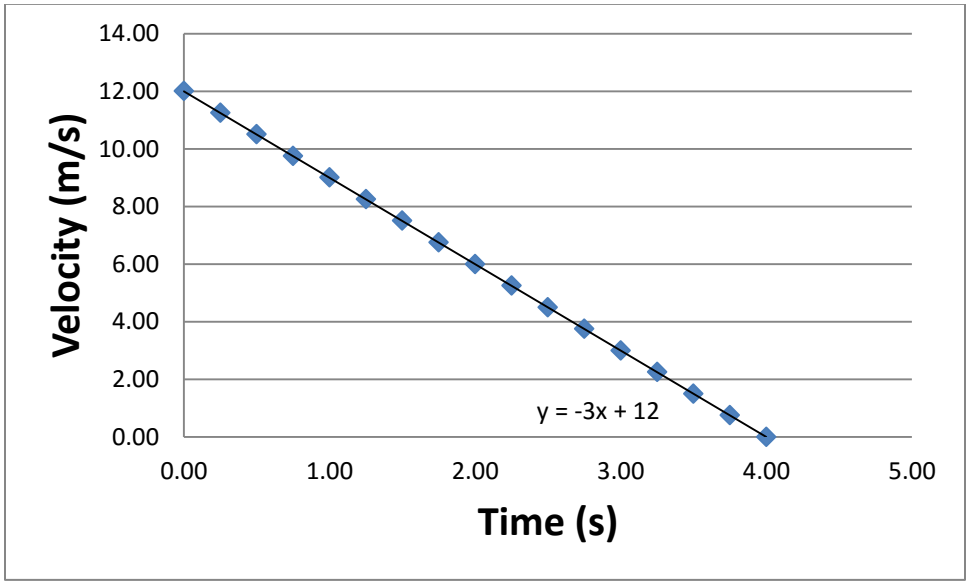
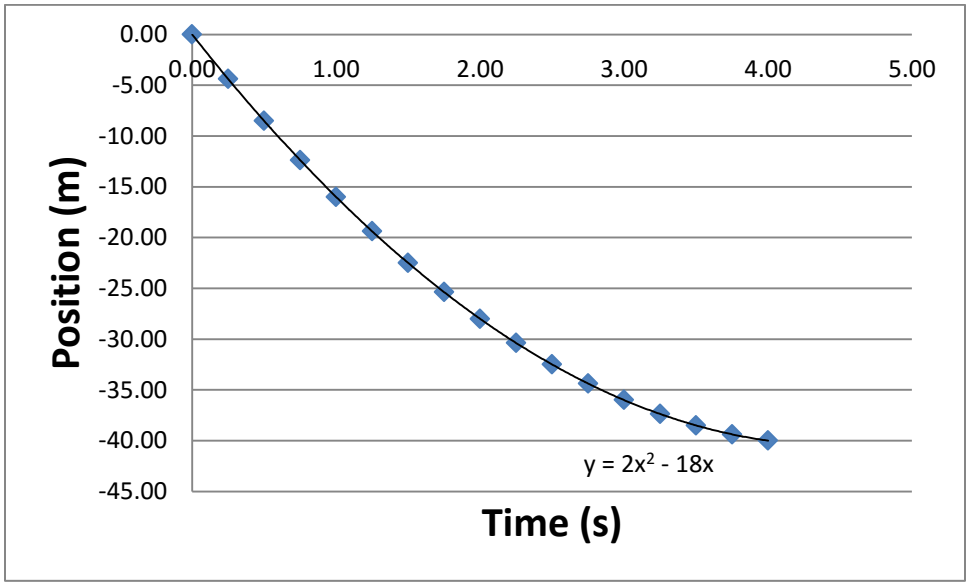
1. Study the two graphs and trend lines. Then answer the following questions.

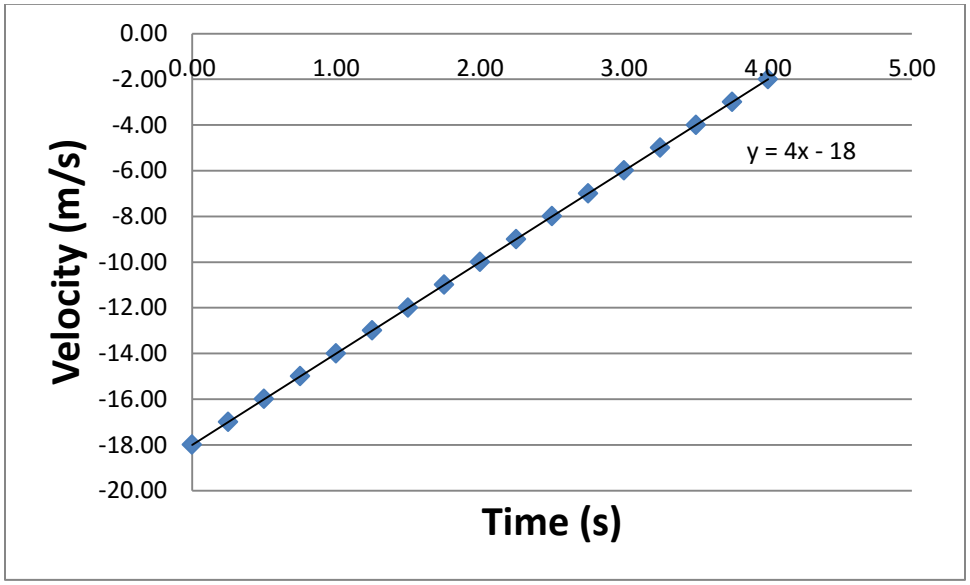




a) Correctly interpret both trend line equations. Re-write them using proper variables.
b) What is the initial velocity of the object? What is its acceleration?
c) Is the object speeding up or slowing down? Justify your answer.
d) Can you determine the initial position of the object using the graphs above? If so, what is it?
e) What is the displacement and velocity of the object at t = 2.30 seconds?
f) At what time is the object's displacement 20.0 meters?
g) By how much does the object's velocity change between t = 3.0 and t = 4.0 seconds?

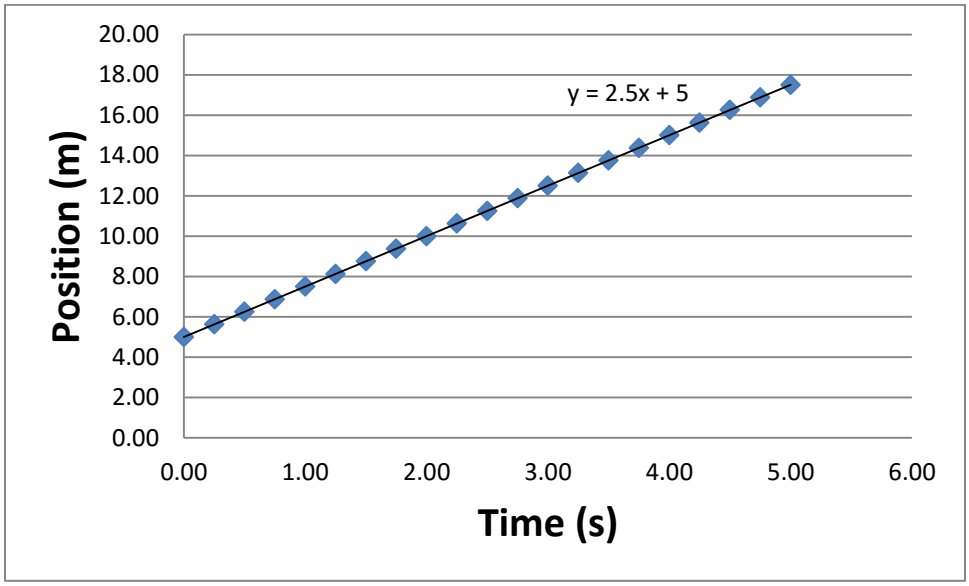
2. Study the two graphs and trend lines. Then answer the following questions.

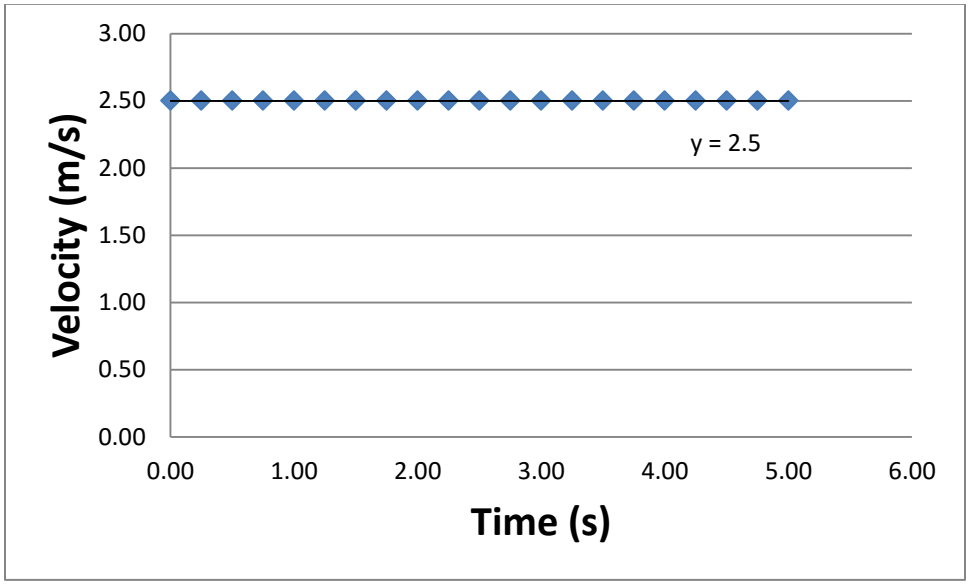




a) Correctly interpret both trend line equations. Re-write them using proper variables.
b) What is the initial velocity of the object? What is its acceleration?
c) Is the object moving rightward (+ direction) or leftward (- direction)?
d) Is the object speeding up or slowing down? Justify your answer.
e) What is the displacement and velocity of the object at t = 2.0 seconds?
f) What is the slope of the position trend line at t = 3.0 seconds?

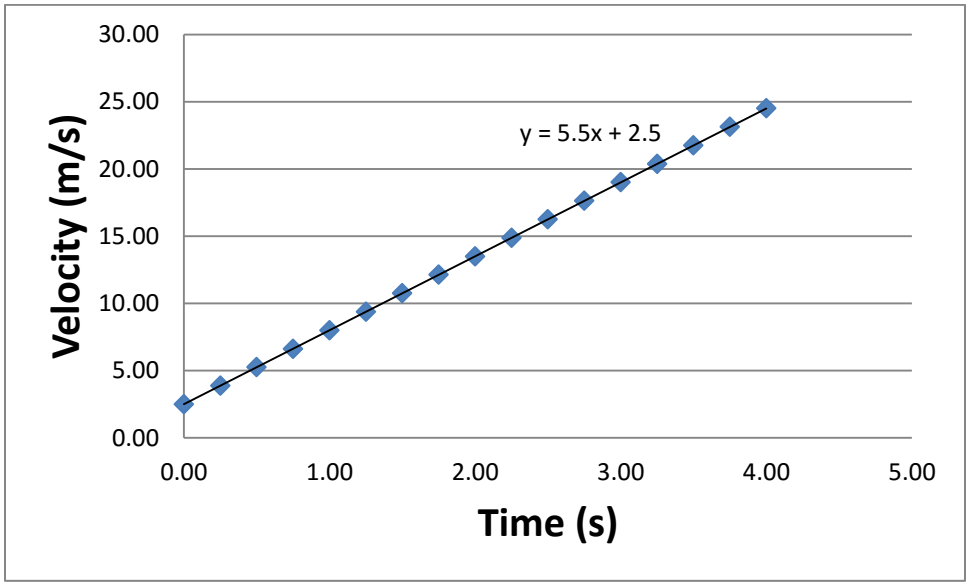
3. Study the two graphs and trend lines. Then answer the following questions.





a) Correctly interpret both trend line equations. Re-write them using proper variables.
b) What is the initial velocity of the object? What is its acceleration?
c) Can you determine the initial position of the object using the graphs above? If so, what is it?
d) Is the object moving rightward (+ direction) or leftward (- direction)?
e) Is the object speeding up or slowing down? Justify your answer.
f) What is the displacement and velocity of the object at t = 1.6 seconds?
g) What is the object's total displacement, up to t = 5.00 seconds?

4. Study the graph and trend line. Then answer the following questions.



a) Using only the single trend line above, write models for both Δx and v_f.
b) What is the initial velocity of the object? What is its acceleration?
c) Can you determine the initial position of the object using the graphs above? If so, what is it?
d) Is the object moving rightward (+ direction) or leftward (- direction)?
e) Is the object speeding up or slowing down? Justify your answer.
f) What is the displacement and velocity of the object at t = 2.8 seconds?
g) At what time is the velocity 16 m/s?
h) What is the (final) velocity when Δx = 35 meters?

Without the benefit of graphs, correctly interpret the following trend lines.

5. $y = 3x^2 + 15x + 10$ from the position vs time graph

   a) Re-write this model with the proper variables.
   b) What is the object's initial position? Initial velocity? Acceleration?
   c) Write out the model $v_f = at + v_i$, with the correct values inserted for a and v_i.
   d) What is the velocity of the object at t = 3.0 seconds?
   e) What is the position of the object at t = 3.0 seconds?
   f) What is the displacement of the object at t = 3.0 seconds?

6. $y = 6x^2 - 20x + 5$ from the position vs time graph
   a) Re-write this model with the proper variables.
   b) What is the object's initial position? Initial velocity? Acceleration?
   c) Write out the model $v_f = at + v_i$, with the correct values inserted for a and v_i.
   d) The object is slowing down for a portion of the time (let's say 8.0 s) that it's moving. Over what period of time is it slowing down?
   e) What is the velocity of the object at t = 3.0 seconds?
   f) When $x_f = 0$, what is Δx?
   g) What is the displacement of the object at t = 2.0 seconds?
   h) What is the displacement of the object at t = 7.0 seconds?

7. $y = -4.2x - 10$ from the velocity vs time graph
   a) Re-write this model with the proper variables.
   b) What is the object's initial velocity? Acceleration?
   c) Write out the model $\Delta x = v_i t + \frac{1}{2}at^2$, with known values inserted.
   d) Is the object slowing down, speeding up, or (like the last problem) does it transition from one to the other?
   e) What is the velocity of the object at t = 4.0 seconds?
   f) What is the displacement of the object at t = 3.0 seconds?
   g) What is the velocity when $\Delta x = -143$ m?