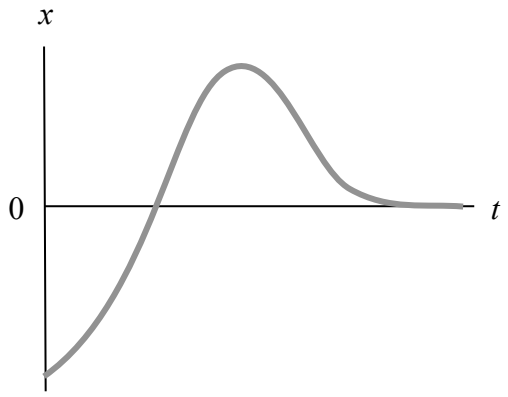
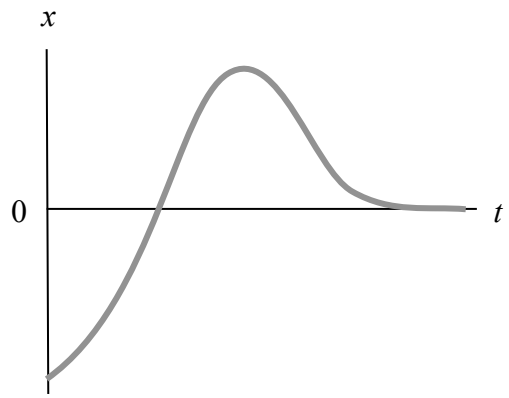
**PHYS 1110 Group Work Sheet 3**
**Kinematics with changing velocity**

With your group, discuss how to answer these questions and write your group answer in the space provided.

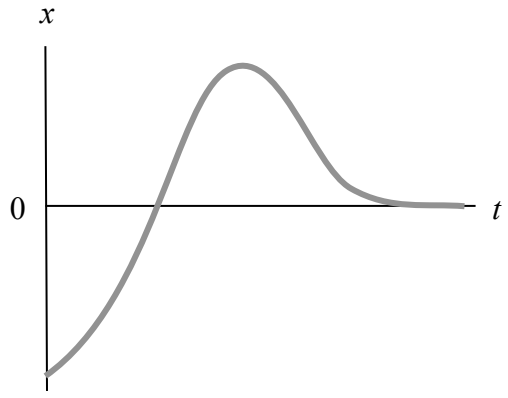
1a. Mark on the graph where position is positive, $x > 0$.



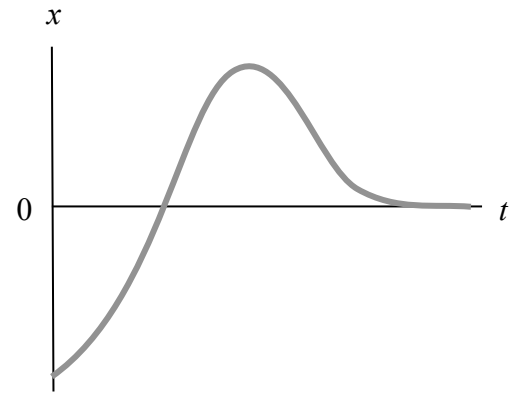

1b. Mark on the graph where position is negative, $x < 0$.



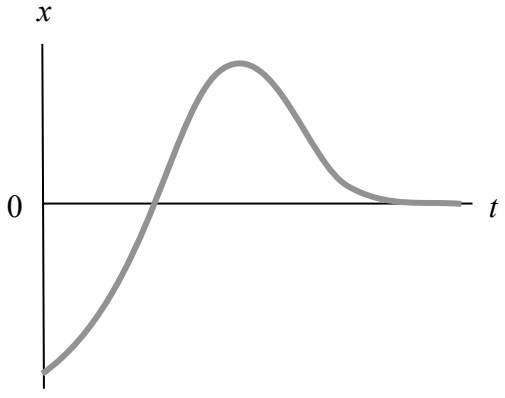

2a. Mark on the graph where velocity is positive, $v > 0$.



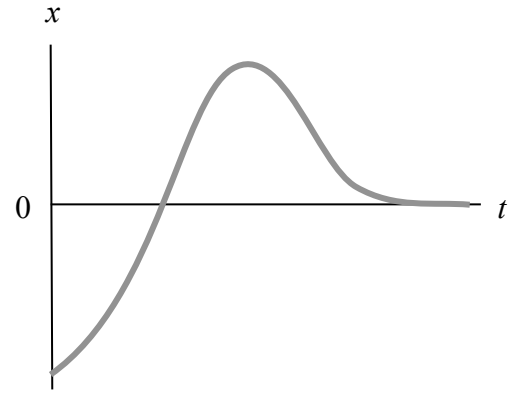

2b. Mark on the graph where velocity is negative, $v > 0$.




3a. Mark on the graph where acceleration is positive, $a > 0$.




3b. Mark on the graph where acceleration is negative, $a < 0$.



4. A car waits at a stop light for 5.0 seconds, smoothly accelerates to 15 m/s over the next 5.0 seconds, and then continues at 15 m/s.
   a. What is the car's acceleration:
      i. for the first 5.0 seconds, sitting at the stop light?

      ii. for the next 5.0 seconds, speeding up to 15.0 m/s?

      iii. while it is cruising at 15.0 m/s?

   b. Find equations for the car's velocity and position:
      i. for the first 5.0 seconds, sitting at the stop light

      ii. for the next 5.0 seconds, speeding up to 15.0 m/s

      iii. while it is cruising at 15.0 m/s

   c. What is the car's velocity right when the light turns green?

   d. What is the car's position when the light turns green?

   e. What is the car's position right when its speed reaches 15.0 m/ s?

   f. What is the car's position after it has been traveling at 15.0 m/s for 5.0 s?