2011 PreAP Two Dimensions 15

1. A rock is launched from a sling shot going 15 m/s at 65°. The ceiling is 10 m tall.
   A. * Does it hit the ceiling? (*Wouldn't you agree that you might want to know how high the rock goes?*)

   B. * Solve for the time to the top of the arch.

   C. Now that you have the time, in the x-direction solve for how far in the x-direction the top of the arch is.

2. * A ball rolls off of a 95 cm tall table. It lands 165 cm away. How fast was it rolling along the table before it rolled off? (*Work in meters.*)

95 cm

165 cm

I   II   III   IV

V   (at 0)   VI   VII   VIII
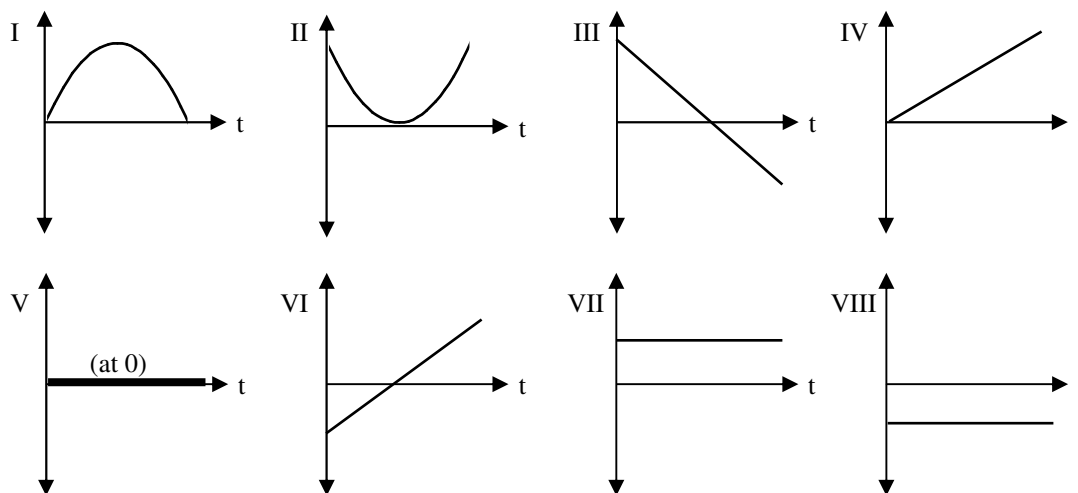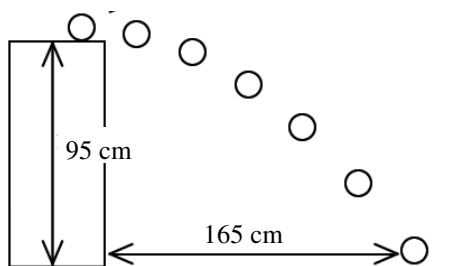
3. Consider a projectile launched from the ground to the ground. Which of the above graphs would portray:

   A. ___ The y direction acceleration.
   B. ___ The horizontal position.
   C. ___ a_x (x acceleration)

   D. ___ Vertical position (ground to ground)
   E. ___ Vy (vertical velocity)
   F. ___ Vx (horizontal velocity)

4. What is the slope of Graph III?

5. What is the slope of Graph IV?

6. When Graph III cross the x-axis, where is the projectile?

1A) Δy = 9.4 m, so does NOT hit the 10 m ceiling.
1B) t = 1.39 sec

2) 3.75 m/s