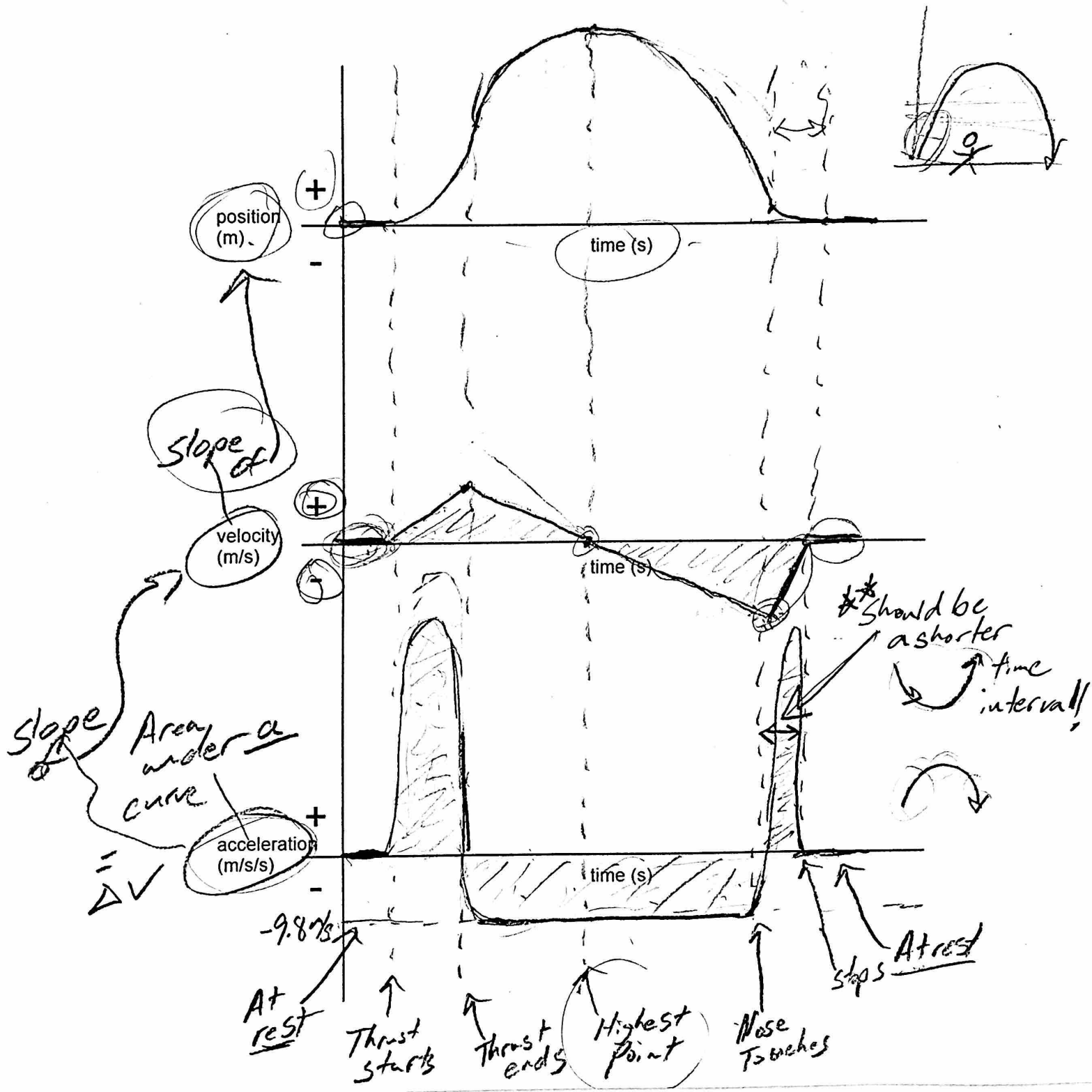


1. Consider a rocket that is launched directly upward. At first the rocket sits at rest on the launch pad. Suddenly the engine provides thrust and the rocket takes off. This lasts for a short time. After the thrust ends, the rocket's momentum carries it higher until, at some point, it begins to fall back to Earth. Eventually the rocket sticks in the ground, nose-first, and remains motionless. Sketch graphs of the rocket's position, velocity, and acceleration. Start a few moments before take-off, and end a few moments after landing. (assume no air resistance)



2. Consider two people passing a soccer ball back and forth. In the beginning, the ball sits motionless in front of person A, who is to our left. Person A kicks the ball along the ground to person B (on our right). Person B stops the ball, waits for a moment, and then kicks it back to A. Person A stops the ball and it sits motionless again. Sketch graphs of the ball's position, velocity, and acceleration. Start a few moments before person A's first kick, and stop a few moments after person A's last stop.

