Some additional practice (discuss the answers but don't write anything down):

1. A person standing on a ledge 75 m above the ground throws a ball upward at 20 m/s. Assume that acceleration due to gravity is $-10$ m/s$^2$.

   (a) How high (from the ground) does the ball get?

   (b) How many seconds does it take before the ball hits the ground?

2. A baseball diamond is a square with sides of length 90 feet. A baseball player hits the ball, and runs toward first base at a speed of 24 ft/s.

   (a) At what rate is his distance from second base decreasing when he is halfway to first base?

   (b) At what rate is his distance from third base increasing at the same moment?

1. An aircraft is flying away from a viewer on the ground at a speed of 210 m/s at an elevation of 130 m. The person on the ground is watching the plane through a set of binoculars. Let $\theta$ denote the viewing angle, measured from the ground, in radians. At what rate is $\theta$ changing when the plane is 500 m away (as measured along the ground)?

2. Suppose a police officer is 300 metres south of an intersection, and travelling north at 80 km/h. At the same time, a vehicle is 400 metres east of the same intersection, travelling east (away from the intersection).

   If the officer's radar gun registers a speed of 32 km/h, how fast is the car travelling?