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1) A chaser vehicle in a circular orbit of radius 8590 km lags 2 degrees behind a target vehicle which is in a coplanar circular orbit of radius 8600 km.

   a) Compute the relative position and velocity of the chaser in the CW frame.
   b) Determine the chaser's relative position and velocity components 30 minutes later.
   c) Compute the total velocity increment required for a 30 minute, 2-impulse rendezvous maneuver starting from the initial state given in part (a).

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2) An astronaut taking a spacewalk outside the International Space Station which is in a circular orbit about the earth at an altitude of 420 km discards a spent battery by throwing it radially outward away from the ISS and the earth with a velocity of 10 meters/sec.

   a) Draw the trajectory of the battery relative to the ISS over one complete orbit of the ISS.
   b) Was it a good idea to discard the battery this way?
