

**EXTRA CREDIT 6: DUE OCTOBER 23 AT 5:00 PM**

*Question:* Suppose you have two circles, one with radius  $r_1$  centered at the origin, and one with radius  $r_2$  centered at  $(r_1 + r_2, 0)$ . Thus, the circles have the point  $P = (r_1, 0)$  in common. Suppose the circle with radius  $r_2$  begins rolling counterclockwise along the outside of the other circle. As the circle rotates, the point that was originally at  $P$  will also rotate, tracing out a path in the plane. Find parametric equations for this path.