Trigonometry

1. Let α be an angle inscribed in a unit circle. Let β be the central angle cutting off the same chord.
   (a) Show $\beta = 2\alpha$ using the basic properties of similar triangles and congruence axioms.
   (b) Show that $\sin(\alpha)$ is $1/2$ the length of the chord cut off by α.
   (c) Deduce the law of sines. Explain the proof with a picture and complete description when α is an obtuse angle.
2. Explain the difference between right angle and unit circle trigonometry.
3. What is an algorithm? (one or two sentences) What are the characteristics of a good description of an algorithm? (at most 3 or 4 sentences).
4. Why do I rail against 'foil' and have no complaint about 'sahcahtoha'? (Whoops, I had to look it up on the internet sohcahtoa.) (This isn't just psychology; there is an important mathematical difference.)