Discussion Problems, August 23

(1) Find the length of both diagonals on a parallelogram with corners

$$(1,1), (2,3), (2,0), (3,2)$$

(2) A *Rhombus* is a parallelogram with all 4 edges the same length. Prove that a Rhombus has diagonals which are perpendicular to each other. (Remember, a proof is any explanation of why something is true!)

(3) Find the unit vector which is parallel to the circle $x^2 + y^2 = r^2$ at the point $(r\cos\theta, r\sin\theta)$.

(4) Discuss with somebody else the philosophical differences between points (x, y, z) and a vector $\langle a, b, c\rangle$. Both of them are geometric objects, so why use two different kinds of notation?