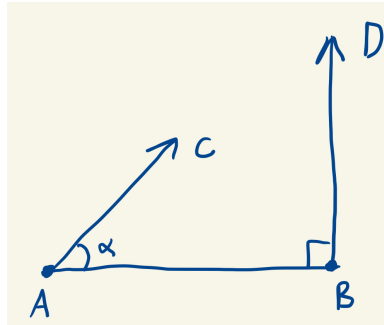


1. Prove that the exterior angles of a regular pentagon add to four right angles.
2. Deduce that all angles of a rhombus (a parallelogram with equal sides) are equal.
3. Here is a special case of Euclid's parallel postulate, which we will call the **right triangle axiom**.

Given a right angle ABD and an acute angle $\alpha = CAB$ on the same side of the line AB , the ray AC when extended will intersect the extension of ray BD .



Show that the right triangle axiom is equivalent to Playfair's axiom. That is, show that Euclid Book I Postulates 1-4 together with the right triangle axiom imply Playfair's axiom, and that Book I Postulates 1-4 together with Playfair's axiom imply the right triangle axiom.

4. For complex numbers $z_1 = x_1 + iy_1$ and $z_2 = x_2 + iy_2$, use a direct computation (without resort to polar coordinates) to show that $|z_1 z_2| = |z_1| |z_2|$. You will probably find it easier to show $|z_1 z_2|^2 = |z_1|^2 |z_2|^2$, which is fine.
5. Henle 2.10
6. Henle 2.15