## Geometry I — Homework 4 — Due 4th Nov

- 1. Let ABC be a right triangle such that  $\angle A = 90^{\circ}$ . Show that if BC = 2AB then  $\angle B = 60^{\circ}$ .
- 2. Let ABC be a triangle such that AB = AC = 2 and  $BC = \sqrt{8}$ . What are  $\angle A$ ,  $\angle B$  and  $\angle C$ ?
- 3. Prove that the sum of the angles of a quadrilateral polygon is  $360^{\circ}$ .
- 4. Let ABC be a right triangle,  $\angle C = 90^{\circ}$ , and let CD be the altitude at the vertex C. Show that  $CD^2 = AD \times DB$ .
- 5. Show that a triangle with sides  $p^2 q^2$ , 2pq and  $p^2 + q^2$ , where p > q is a right triangle.
- 6. Let ABC and A'B'C' be triangle such that AB = A'B', BC = B'C' and ∠A = ∠A'. Show that they are equal.
  (Hint: Let BH and B'H' be the altitudes from B and B'...)
- 7. Let ABCD be a quadrilateral such that AB = AD and CB = CD. Show that AC is a segment on the perpendicular bisector of BD.