Problem 2) a) The triangles are similar because their angles are identical. Each triangle has a $90°$ angle. In the case of ABC and ACD, the angles at the vertex A are the same, whereas in the case of ABC and CBD, the angles at the vertex B are the same. Since the sum of the angles of any triangle is $180°$, the equality of two angles is sufficient to prove the equality of the third.

b) Since the triangles are similar, their areas are proportional to the squares of their hypotenuses. This is because, when the hypotenuse of ABC is multiplied by a/c, so does its altitude and, therefore, the area gets multiplied by $(a/c)^2$. Similarly, when ABC's hypotenuse is multiplied by b/c, its area gets multiplied by $(b/c)^2$. Consequently, if ABC's area is taken to be unity, those of CBD and ACD will be $(a/c)^2$ and $(b/c)^2$, respectively. The latter two, of course, must add up to ABC's area, that is, $(a/c)^2 + (b/c)^2 = 1$, proving Pythagoras's theorem that $a^2 + b^2 = c^2$.