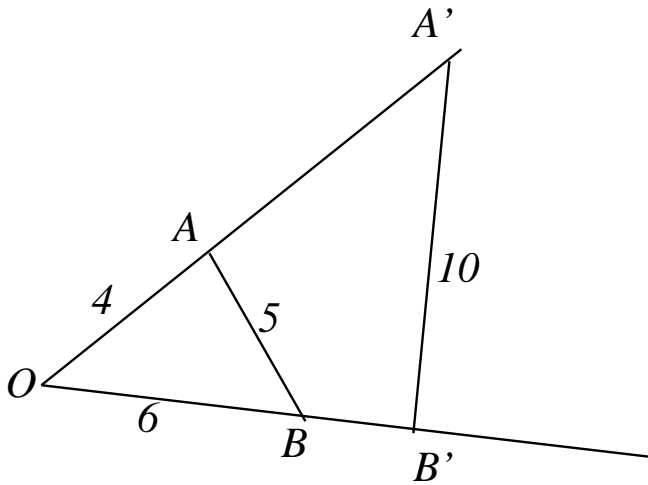


Math 302, Section B1; April 30, 2003
Quiz 11 (with Solution)

PRINT YOUR NAME:

Problem 1.

Suppose an inversion $I_{O,r}$ takes a point A to A' and a point B to B' , as shown in the figure below. Suppose $OB = 6$, $AB = 5$, $OA = 4$ and $A'B' = 10$. Find the radius r of the inversion.



Solution.

By Theorem 5.5.4 $\triangle OAB$ is similar to $\triangle OA'B'$.

Therefore $\frac{OB}{OA'} = \frac{AB}{A'B'}$, that is $\frac{6}{OA'} = \frac{5}{10}$ and hence $OA' = 12$. Since A' is the image of A under the inversion $I_{O,r}$, we have $r^2 = OA \cdot OA' = 4 \cdot 12 = 48$. Hence $r = \sqrt{48} = 4\sqrt{3}$.