Problem 1

What is the inradius of a triangle with sides 5, 12, and 13?

Problem 2

Let *ABCD* and *ACEF* be two rectangles. Let *P* be a point in both of those rectangles. If $PA^2 = 34, PD^2 = 27, PE^2 = 59, PF^2 = 50$, find $PB^2 + PC^2$

Problem 3

Vincent was biking from (5, 0) to $(4\sqrt{2}, 3)$ then finally to (-5, 0). The absolute difference in time between the first leg of his trip and the second was 30 minutes. He then takes a similar trip from (5, 0) to $(-8, 3\sqrt{3})$ then finally to (-5, 0). What is the absolute difference in time between the first and second leg of this trip in minutes? Assume he bikes at a constant pace. .