

A RATE PROBLEM

Name: _____

In a hydrocarbon solution, the gold compound $(\text{CH}_3)_3\text{AuPH}_3$ decomposes into ethane (C_2H_6) and a different gold compound, $(\text{CH}_3)\text{AuPH}_3$. The following mechanism has been proposed for the decomposition of $(\text{CH}_3)_3\text{AuPH}_3$:



(a) What is the overall reaction?

(b) What are the *intermediates* of the reaction?

(c) What is the molecularity of each elementary step?

(d) What is the rate determining step?

(e) What is the rate law predicted by this mechanism?

(f) What would the effect on the reaction rate of adding PH_3 to the solution of $(\text{CH}_3)_3\text{AuPH}_3$?