KINETICS ½ SHEET (turn in with PS # 24)

$$H_2\,(g) + I_2(g) \rightarrow 2\,HI\,(g)$$

1) For the exothermic reaction represented above, carried out at 298K, the rate law is as follows:

$$\text{Rate} = k[H_2][I_2]$$

Predict the effect of each of the following changes on the initial rate of the reaction and explain your prediction in terms of collision theory.

A) Addition of hydrogen gas at constant temperature and volume.

B) Increase in volume of the reaction vessel at constant temperature.

C) Addition of a catalyst. In your explanation, include a diagram of potential energy versus reaction coordinate.

D) Increase in temperature. In your explanation, include a diagram showing the number of molecules as a function of energy.

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