CT10-1. Review of phase diagrams: a pendulum has a phase diagram, which is a plot of $d\theta/dt$ vs $\theta$. Which of the following trajectory portions are physically allowed in the phase diagram of a pendulum?

A) All  B) None  C) I, II only  D) I, III only  E) I, III, IV only
CT10-2. Consider the two sketches of angle versus time for a driven, damped pendulum. Which shows a larger driving force amplitude $\gamma$?

A) I has a larger driving force than II.
B) II has a larger driving force I.
C) I and II have the same driving force.
D) It cannot be determined from the information given.
CT10-3. Which of the following is a physically possible bifurcation diagram for a driven damped pendulum near the transition from period-1 to period-2 solutions?

CT10-4. What can you say about the Lyapunov exponents of the driven, damped pendulum dynamics with trajectories shown below?

A) All LEs < 0  
B) All LEs = 0  
C) Exactly one LE > 0  
D) At least one LE > 0  
E) All LEs > 0