Late assignments are not accepted. Trying to google the answers is not a good idea.
Each question is worth 10 points.

(1) Find two examples of nonisomorphic graphs that are Eulerian, but not randomly traceable.
   Prove that these graphs have the required properties, and that they are not isomorphic. (You
cannot use the ‘bowtie graph’ example used in class.)

(2) A pair $G, e$ is Eulerian-ish if $G = (V, E)$ is a graph, $e$ is an edge of $G$, and there exists a closed
   walk in $G$ such that
   (a) It passes through every edge in $G$.
   (b) It passes through every edge in $E - e$ exactly once (it can pass through $e$ any nonzero
   number of times).
   Clearly state a criterion for a pair $G, e$ being Eulerian-ish similar to the one for being Euler
   (i.e., $G$ is connected and every vertex has an even degree). Then prove that your criterion is
equivalent to being Euler-ish.

(3) Is the following graph Hamiltonian? Prove your claim.

(4) (a) Find a graph with 8 vertices with no 3-cycles and no induced subgraph isomorphic to $N_4$.
   (b) Prove that every simple graph with 9 vertices with no 3-cycles has an induced subgraph
   isomorphic to $N_4$. 