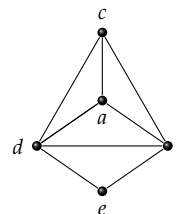
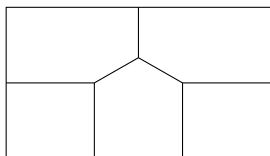


PROBLEM 1. Consider the graph pictured in the margin.

- (i) Find a path of maximal length. (Recall: a path contains no repeated vertices.)
- (ii) Find a cycle containing all of the vertices.
- (iii) Find an Eulerian walk from a to c .
- (iv) Find a Hamiltonian cycle.



PROBLEM 2. Consider the following floor plan for a building:



We would like to know if it is possible to cross each interior wall in the building exactly once (without teleporting).

- (i) Turn this into graph theory problem. (Draw the corresponding graph.)
- (ii) Either find such a walk, or prove that no such walk exists.
- (iii) What if we want to pass through the exterior walls exactly once as well?

PROBLEM 3. Does the dodecahedron graph have a Hamiltonian cycle? If so, demonstrate one by listing its vertices.

