Exercises for Week 1

7 February 2022

1. For the graph below, complete the following.

   (a) Determine a walk from vertex 2 to vertex 7 that is not a trail.

   (b) Determine a trail from vertex 2 to vertex 7 that is not a path.

   (c) Determine a path from vertex 2 to vertex 7.

   (d) How many paths are there from vertex 1 to vertex 7? What is the geodesic distance between these two vertices? Is there a unique shortest path between them?

   (e) How many connected subgraphs of order four can be found? How many of these subgraphs contain a cycle of length at least three? Of length four?