Name: _____

Student ID: _____

This mid-term quiz is worth 10% of the final mark for the course.

All questions have equal weight: 1 point.

Answer directly on these pages.

There is only one good answer for multiple choice questions.

This is an open-book exam, only paper is allowed. No computer/phone/etc; a calculator is fine.

The total number of questions is 10.

You have 40min to do this quiz.

1. (1 point) In the context of terrains, a TIN is a triangulation in 2D of the samples points (x, y, z) projected to the xy-plane, and then a 3D surface is obtained by lifting the vertices to their original z position.
   - ◯ True
   - ◯ False

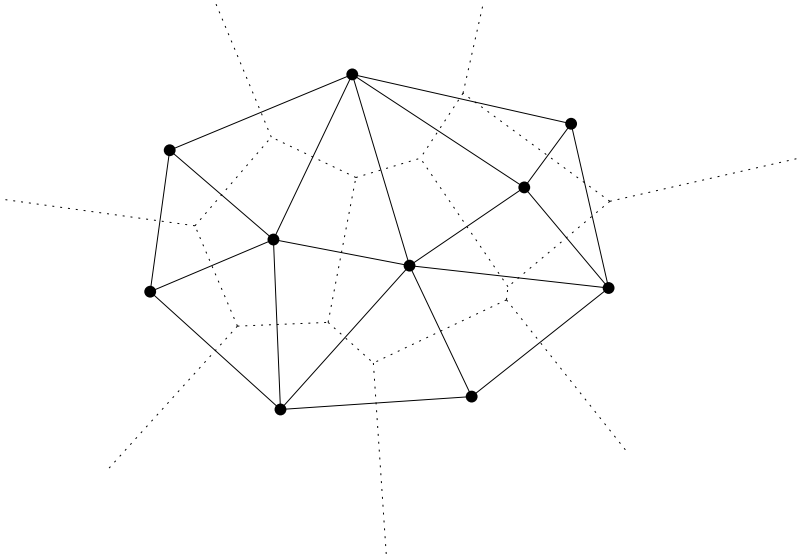
2. (1 point) You have 572 elevation points (x, y, z) and you want to create a gridded DTM (with a resolution of 1mX1m) from the region covering those points (which is 40mx40m). At how many places will you have to interpolate?
   - ◯ 572
   - ◯ 1144
   - ◯ 1521
   - ◯ none of these

3. (1 point) [What is the missing word?] A _____ is the word used in the runoff community to describe a pit.

4. (10 points) Given the set S of 10 points in the plane below:

   1. Draw the Delaunay triangulation (DT);
   2. Draw the Voronoi diagram;

   (use diff colours so that it is clear what is what)

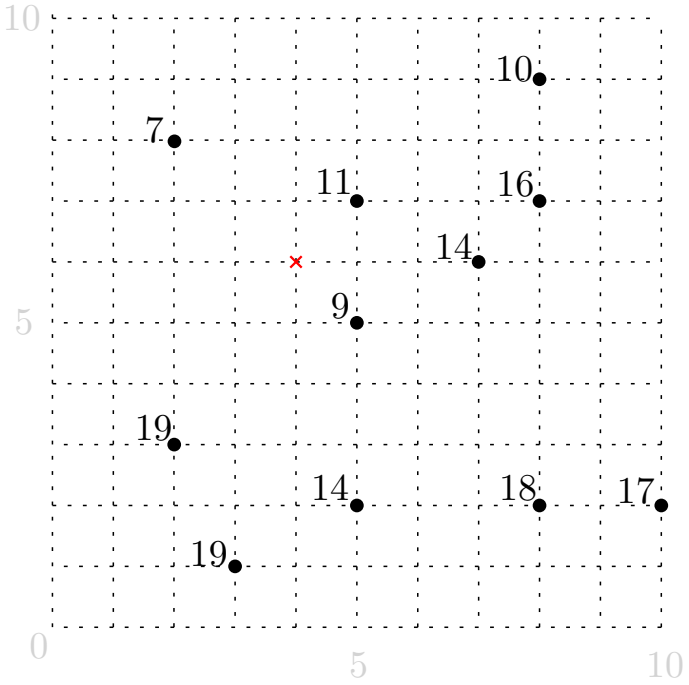


5. (1 point) You obtain a DTM for an area, it is a raster grid in GeoTIFF format with a resolution of 50cm. You noticed that several cells have `no_data` values. Can you use bilinear interpolation to fill them? If not, why not?

6. (1 point) Look at Figure 8.11 of the book: why is the legend stating that hillshade goes from 0 to 255? What are the units?

7. (1 point) If we estimate the elevation at location (4, 6) (the red cross) with: (1) IDW (*radius* = 2.0; *power* = 2) and (2) IDW (*radius* = 2.0; *power* = 3), do we get the same answer?

   ◯ Yes
   ◯ No



8. (1 point) In a LAS file the coordinates of each points are stored with floats/doubles, but in a LAZ files with integers.

   ◯ True
   ◯ False

9. (1 point) Unlike the CSF algorithm, the TIN refinement ground filter algorithm is not affected by the presence of outliers in the datasets (because it can remove them with its 2 parameters).

   ◯ True
   ◯ False

10. (1 point) Calculate the aspect (in degrees) of the cell in the middle by using the 'finite difference method' (p.87 of the book).