

TD 609- Surface Water Tutorial

1. Consider the maps given to you and the points on map. Outline the watershed for each of these points.
2. Consider the map of Karjat Taluka with the locations of the rain-gauges marked in blue. Also note the marking of the North Karjat tribal block. Use the Voronoi region constructions and estimate the areas for the region allocated to each rain-gauge. If you did not know the existence of rain-gauges outside North Karjat, what would be your decomposition just for North Karjat?
3. Consider the region  $Z$  whose elevation data is as below:

$$\begin{bmatrix} 5 & 4 & 3 & 2 & 1 & 0 \\ 4 & 3 & 2 & 1 & 0 & 1 \\ 3 & 2 & 1 & 0 & 1 & 2 \\ 2 & 1 & 0 & 1 & 2 & 3 \\ 1 & 0 & 1 & 2 & 3 & 4 \\ 0 & 1 & 2 & 3 & 4 & 5 \end{bmatrix}$$

For the point (2,2) compute the output of `drain` by hand and compare your answer with the program.

4. Using the `drain.sci` model above, is it possible to construct an infiltration and run-off model?
5. Consider the drain which runs from H2 to H5, which is 2 meters wide. The elevation difference between the two points is roughly 1.5m and the length is roughly 600m. If the height of the water flowing is 0.5m, estimate the flow in cum/sec. If its raining at roughly 20mm in an hour, how much area is in the catchement area of the drain?