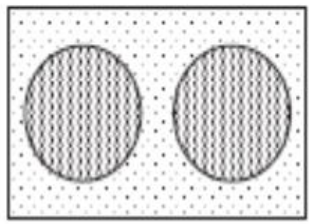
5. Identify the clusters in Figure 8.3 using the center-, contiguity-, and density-based definitions. Also indicate the number of clusters for each case and give a brief indication of your reasoning. Note that darkness or the number of dots indicates density.



(a)

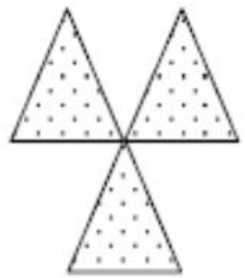
(a) **center-based** 2 clusters. The rectangular region will be split in half. Note that the noise is included in the two clusters.
contiguity-based 1 cluster because the two circular regions will be joined by noise.
density-based 2 clusters, one for each circular region. Noise will be eliminated.

5. Identify the clusters in Figure 8.3 using the center-, contiguity-, and density-based definitions. Also indicate the number of clusters for each case and give a brief indication of your reasoning. Note that darkness or the number of dots indicates density.

(b)

(b) **center-based** 1 cluster that includes both rings.
contiguity-based 2 clusters, one for each rings.
density-based 2 clusters, one for each ring.

5. Identify the clusters in Figure 8.3 using the center-, contiguity-, and density-based definitions. Also indicate the number of clusters for each case and give a brief indication of your reasoning. Note that darkness or the number of dots indicates density.



(c)

(c) **center-based** 3 clusters, one for each triangular region. One cluster is also an acceptable answer.
contiguity-based 1 cluster. The three triangular regions will be joined together because they touch.
density-based 3 clusters, one for each triangular region. Even though the three triangles touch, the density in the region where they touch is lower than throughout the interior of the triangles.

5. Identify the clusters in Figure 8.3 using the center-, contiguity-, and density-based definitions. Also indicate the number of clusters for each case and give a brief indication of your reasoning. Note that darkness or the number of dots indicates density.

(d)

(d) **center-based** 2 clusters. The two groups of lines will be split in two.
contiguity-based 5 clusters. Each set of lines that intertwines becomes a cluster.
density-based 2 clusters. The two groups of lines define two regions of high density separated by a region of low density.