

Part I Textbook Questions

4-19 What is the Euler number of each of the following shapes? Verify your results using the Poincaré formula of Equation (4.165)?

4-26 The floodfill algorithm as presented in Algorithm 4.5 performs essentially a depth-first search of the space due to its use of a stack data structure. If a queue is used instead, then the algorithm will perform a breadth-first search. If the algorithm is modified to look not for identically colored pixels, but rather similarly colored pixels, then explain why a breadth-first search would be preferable.

5-44 Compute the a) grayscale dilation and grayscale erosion of the 5 × 3 × 5 image shown in the previous question, using a 3 × 3 flat SE consisting of all zeros (the grayscale version of B8). Then compute b) the grayscale closing and opening, and c) the white top-hat and black top-hat transforms. Handle borders with reflection. horizontal 31 0 214 and vertical 31 0 214 k

5-45

6-10