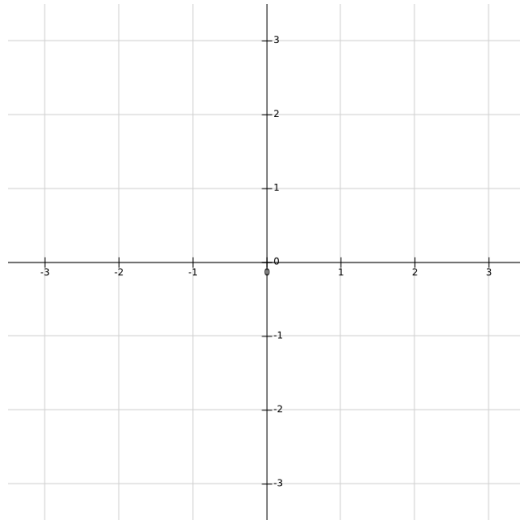


7 Further Graphics (pb355)

(a) Consider the set  $\mathbf{C}$  of 2D control points:

$$\mathbf{C} = \{ (0, 0), (0, 2), (2, 1), (2, -1), (-2, -1), (-2, 1) \}$$



On 3 separate 2D graph plots, each ranging from  $(-3, -3)$  to  $(3, 3)$ ,

- (i) Draw the *Voronoi diagram* of  $\mathbf{C}$  [2 marks]
  - (ii) Draw the *Delaunay triangulation* of  $\mathbf{C}$  [2 marks]
  - (iii) Draw the *empty circles* of the *Voronoi points* of  $\mathbf{C}$  [2 marks]
  - (iv) What is the first value in the *equiangularity* of  $\mathbf{C}$ ? [3 marks]
  - (v) What is the  $(X, Y)$  position of the Voronoi point of  $\mathbf{C}$  with the most negative  $Y$  coordinate? [3 marks]
- (b) Using pseudocode, give an algorithm for finding the Delaunay triangulation of a set of 2D points  $\mathbf{S}$ . [4 marks]
- (c) Explain why the empty circles around the Voronoi points of a Voronoi diagram are, in fact, empty. [4 marks]