Solutions to the Exercises of Section 2.6.

2.6.1. In the risk set given by Figure 1.9, the lower boundary is given by the two closed line segments, one from \((-2,3)\) to \((-3/4,-9/4)\), and the other from \((-3/4,-9/4)\) to \((3,-4)\). The minimal complete class, \(D_0\), is the set of rules whose risk points lie on one of these segments. From Table 1.7, these are the rules that randomize between \(d_1\) and \(d_2\) in arbitrary proportions (take action 1 if 1 is observed and randomize between 1 and 2 if 2 is observed), and the rules that randomize between \(d_2\) and \(d_4\) in arbitrary proportions (take action 2 if 2 is observed and randomize between 1 and 2 if 1 is observed).

2.6.2. In the solution to Exercises 1.7.3, we found that the risk set is

\[ S = \{(x, y) : 0 \leq x \leq 1, \frac{1-x}{2} \leq y \leq \frac{1}{2} + \frac{1-x}{2}\} \]

This is closed and bounded and the lower boundary is the line segment \(\lambda(S) = \{(x, y) : 0 \leq x \leq 1, y = (1-x)/2\}\). The set \(D_0\) of decision rules corresponding to points on this line segment form a minimal complete class. These are the the decision rules that take action 1 if \(X = 0\) and randomize with any weights on actions 0 and 1 if \(X > 0\). This is the class of admissible decision rules.