

This project asks you to explore Karnaugh maps for six variables.

- (a) How many cells in a Karnaugh map for Boolean functions with six variables are needed to represent each of the following products?
- (i) x_1
 - (ii) $\overline{x}_1 x_6$
 - (iii) $\overline{x}_1 x_2 \overline{x}_6$
 - (iv) $x_2 x_3 x_4 x_5$
 - (v) $x_1 \overline{x}_2 x_4 \overline{x}_5$
- (b) Which rows and which columns of a 4×16 map for Boolean functions in six variables using the Gray codes 1111, 1110, 1010, 1011, 1001, 1000, 0000, 0001, 0011, 0010, 0110, 0111, 0101, 0100, 1100, 1101 to label the columns and 11, 10, 00, 01 to label the rows need to be considered adjacent so that cells that represent minterms that differ in exactly one literal are considered adjacent? (For a description of Gray codes, see page 773, and in particular Example 6, as well as Example 8 of section 9.5 on pages 642 and 643.)