Homework I

Tom Kelliher, CS 240

50 points, due Feb. 10

1. Use truth tables to verify each of the following:
   (a) DeMorgan’s theorem for three variables: $XYZ = \overline{X} + \overline{Y} + \overline{Z}$.
   (b) Identity 15 (from Sept. 12’s notes).
   (c) $XY + YZ + XZ = XY + YZ + XZ$

2. Use Boolean manipulation to verify each of the following:
   (a) $\overline{X} \cdot \overline{Y} + \overline{X}Y + XY = \overline{X} + Y$
   (b) $\overline{A}B + \overline{B} \cdot \overline{C} + AB + BC = 1$
   (c) $(X + Y)(X + \overline{Y}) = X$
   (d) $X(X + Y) = X$