Math 210-1, ANSWERS to SAMPLE FINAL EXAMINATION, Fall 2002

1. Please see your textbook.

2. The right-hand column has four T's; simplified statement: T; the corresponding circuit has no switches, this is just a solid line on the picture.

3. $n(A \cup B) = 48$. **4.** 7/12. **5.** 7/27. **6.** 1728. **7.** 220.

8. $C(5,3) \cdot C(6,4)/C(18,7) = 25/5304$. **9.** $-\$.40$ **10.** .0918

11. The mean is 5.67; the standard deviation $s = \sqrt{33.22}$.

12. $(x, y) = (x, (2x - 4)/3)$.

13. $(x, y, z) = (2.2, 1.2, 3.4)$. If you do not like decimals or fractions, try to solve the following problem:

$2x - y + 2z = 10$
$x + 2y + 3z = 6$
$3x - y - z = 2$

(This system has integer solutions, do not forget to check your answer!)

14. $AB = \begin{pmatrix} -3 & -4 & -9 \\ 9 & 2 & 2 \end{pmatrix}$; BA does not exist.

15. Max $z = 18$ at $(1, 3)$.

16. x is the number of cocktail tables;
y is the number of end tables;
z is the objective function (profit).

Maximize $z = 12x + 10y$
subject to: $2x + 4y \leq 20$
$3x + y \leq 15$
$x \geq 0$
$y \geq 0$.

17. (a) No dominated strategies; 2 is a saddle point; the game is strictly determined. The optimum strategies: (0,1,0) for player A and (1,0,0) for player B. The value of the game is 2, so it is not fair.

(b) Dominated strategies: row 3 and columns 3 and 4. No saddle points, so the game is not strictly determined. The optimum strategies: (1/3,2/3,0) for player A and (2/3,1/3,0,0) for player B. The value of the game is $-2/3$, so it is not fair.