

Math 574 1992 Exam 3 Solutions

PRINT Your Name: Key

There are 6 problems. The exam is worth a total of 100 points.

SHOW your work. CIRCLE your answer.

1. (16 points) How many integer solutions are there to the inequality

$$x_1 + x_2 + x_3 + x_4 \leq 14,$$

with $0 \leq x_i$, for all i ?

ans = the # of integer solutions of $x_1 + x_2 + x_3 + x_4 + x_5 = 14$
with $0 \leq x_i$ for all i

= $\binom{18}{4}$

14 picks
4 switches

2. (16 points) How many 40-digit quaternary sequences have exactly 12 zeros? (A quaternary sequence is a sequence made out of 0's, 1's, 2's, and 3's.)

$$\binom{40}{12} 3^{28}$$

There are $\binom{40}{12}$ ways to place the zeros.

There are 3 choices for each of the other 28 places.