

MATH/EECS 1028: DISCRETE MATH FOR ENGINEERS
WINTER 2015
Assignment 3 (Released April 06, 2015)
Submission deadline: 1:15 pm, April 17, 2015

Notes:

1. The assignment can be handwritten or typed. It MUST be legible.
2. You must do this assignment individually.
3. Submit this assignment only if you have read and understood the policy on academic honesty on the course web page. If you have questions or concerns, please contact the instructor.
4. Use the dropbox near the EECS main office to submit your assignments, OR submit your assignment in the first TEN minutes of class on the day of the deadline. No late submissions will be accepted. Please do not send files by email.
5. Your answers should be precise and concise. Points may be deducted for long, rambling arguments.
6. Assume \mathbb{R} to denote the real numbers, \mathbb{Z} to denote the set of integers $(\dots, -2, -1, 0, 1, 2, \dots)$ and \mathbb{N} to denote the natural numbers $(1, 2, 3, \dots)$.

Question 1

[5 points] Find the coefficient of x^4 in the expansion of $(1 + 3x + 2x^3)^{12}$?

Question 2

[5 points] In how many ways may we choose three distinct integers from $\{1, 2, \dots, 80\}$ so that one of them is the average of the other two?

Question 3

[5 points] A square chessboard has 16 squares (4 rows and 4 columns). 4 checkers are put in such a way that only one checker can be put in a square. In how many ways can the checkers be put if

1. there is exactly one checker per row and one checker per column
2. there must be exactly one column without a checker.

Question 4

[5 points] Find the number of 4-tuples (x, y, z, w) of positive odd integers that are solutions to the equation $x + y + z + w = 78$.