

CSE230 (Discrete Mathematics)

Assignment 2

Topics: Lecture 4, 7, 8

Lecture 4:

1. What is the coefficient of x^{47} in the expansion of $(2x^3 + \frac{1}{x})^{29}$? [if the answer has a form like $29C_a \cdot b^k$, what is the value of $(a+b+k)$?
2. The 3rd term in the expansion of $(y^2 + 2/y)^{21}$ and the 3rd term in the expansion of $(y + 1/3)^{37}$ are equal. What is the value of y ? [Give the answer in fractional form]
3. What is the coefficient of z^4 in the expansion of $(z^3 + 3z + 1)^6$?
4. What is the coefficient of $a^5b^3c^2$ in the expansion of $(370a + 285b + 99c)^{11}$?

Lecture 7:

1. Two dice are tossed. What is the probability that the total score is a prime number greater than 3?
2. A box contains 20 electric bulbs, out of which 4 are defective. Two bulbs are chosen at random from this box. What is the probability that at least one of these is defective?
3. Four cards are drawn from a standard deck of playing cards without replacing a card after it is drawn. If the first 3 cards are spades, what is the probability that the next card drawn is not a spade?
4. 4 ETS big book and 5 barrons books are arranged in a row on a shelf at random. Find the probability that the books of the same publisher will be put together?

Lecture 8:

1. An n sided die is rolled. Each face has a unique label from 1 to n . Let, X be the random variable that denotes the number that is on top of the die after it has landed. Express the variance of the variable X in terms of n .
2. An n sided die is rolled. Each face has a unique label from 1 to n . Let, X be the random variable that denotes the number that is on top of the die after it has landed. Determine $P(X \leq n)$.
3. Two 10 sided dice are rolled. What is the probability that the sum of the two numbers that come up on the dice is a prime number?
4. Two n sided die are cast. Each faces are numbered from 1 to n . One die is red, one is blue. What is the probability that the red one doesn't land a number divisible by 3 and the blue one doesn't land a number divisible by 2?