

Unit 11 - Week 9

Course outline

How does an NPTEL online course work?

Week 0

Week 1

Week 2

Week 3

Week 4

Week 5

Week 6

Week 7

Week 8

Week 9

NetworkX - Digraphs

NetworkX - Adjacency matrix

NetworkX- Random graphs

NetworkX - Subgarph

NetworkX - Isomorphic graphs Part 1

NetworkX - Isomorphic graphs Part 2

NetworkX - Isomorphic graphs: A game to play

NetworkX - Graph complement

NetworkX - Eulerian graphs

NetworkX - Bipaprtite graphs

NetworkX - Coloring

Counting in a creative way

Example 1 - Fun with words

Words and the polynomial

Words and the polynomial - Explained

Example 2 - Picking five balls

Picking five balls - Solution

Picking five balls - Another version

Definition of Generating function

Generating function examples - Part 1

Generating function examples - Part 2

Generating function examples - Part 3

Binomial expansion - A generating function

Binomial expansion - Explained

Picking 7 balls - The naive way

Picking 7 balls - The creative way

Generating functions - Problem 1

Generating functions - Problem 2

Generating functions - Problem 3

Why Generating function?

Quiz : Assignment 9

Week 9 Feedback

Week 10

Week 11

Week 12

Text Transcripts

Download Videos

Assignment 9

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-04-01, 23:59 IST.

1) The coefficient of x^7 in $(1 + x + x^2 + x^3 + x^4 + \dots)^4$ is :

1 point

- 120
 330
 792
 210

No, the answer is incorrect.
Score: 0

Accepted Answers:
120

2) In how many ways can 400 identical pens be divided in packages of 5 among 4 student groups so that each group gets at least 5 and not more than 25?

1 point

- The coefficient of x^{400} in $(x^5 + x^{10} + x^{15} + x^{20} + x^{25})^2$
 The coefficient of x^{400} in $(x^5 + x^{10} + x^{15} + x^{20} + x^{25})^4$
 The coefficient of x^{400} in $(x^5 + x^{10} + x^{15} + x^{20} + x^{25})^5$
 None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
The coefficient of x^{400} in $(x^5 + x^{10} + x^{15} + x^{20} + x^{25})^4$

3) Generating function for $a + b + c + d = 5$, where $0 \leq a, b, c, d \leq 5$ is

1 point

- $(1 + x + x^2 + x^3 + x^4 + x^5)^3$
 $(1 + x + x^2 + x^3 + x^4 + x^5)^5$
 $(1 + x + x^2 + x^3 + x^4 + x^5)^4$
 $(x + x^2 + x^3 + x^4 + x^5)^4$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $(1 + x + x^2 + x^3 + x^4 + x^5)^4$

4) The derivative of $\frac{1}{1-x}$ is a generating function whose sequence is :

1 point

- 1,2,3,4,5,....
 0,1,0,1,0,....
 1,2,4,8,16,....
 1,2,4,6,8,....

No, the answer is incorrect.
Score: 0

Accepted Answers:
1,2,3,4,5,....

5) The sequence generated by $\frac{x^4}{(1-x)}$ is

1 point

- 0, 0, 0, 0, 1, 1, 1, 1, ...
 0, 0, 0, 1, 1, 1, 1, 1...
 0, 0, 0, 0, 1, -1, 1, -1, ...
 0, 0, 0, 1, -1, 1, -1, ...

No, the answer is incorrect.
Score: 0

Accepted Answers:
0, 0, 0, 0, 1, 1, 1, 1, ...

6) In how many ways can we distribute 12 apples among Johnson, Grace and Gloria, such that Johnson gets at least 4, and Grace and Gloria get at least 2, but Gloria gets no more than 5?

1 point

- 13
 14
 15
 16

No, the answer is incorrect.
Score: 0

Accepted Answers:
14

7) The coefficient of x^8 in $(1-x)^{-5}$ is

1 point

- 792
 1287
 495
 None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
495

8) The generating function for the sequence 0, 0, 0, 6, -6, 6, -6, is :

1 point

- $6x^2 - 6x^4 + 6x^6 + \dots$
 $6x^3 + 6x^4 + 6x^5 + 6x^6 + \dots$
 $6 + 6x^3 - 6x^5 + 6x^7 + \dots$
 $6x^3 - 6x^4 + 6x^5 - 6x^6 + \dots$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $6x^3 - 6x^4 + 6x^5 - 6x^6 + \dots$

9) Which of the following represents the number of ways of distributing 40 identical chocolates among 8 children?

1 point

- The coefficient of x^{40} in $(1 + x + x^2 + x^3 + \dots + x^{40})^2$
 The coefficient of x^{40} in $(1 + x + x^2 + x^3 + \dots + x^{40})^4$
 The coefficient of x^{40} in $(1 + x + x^2 + x^3 + \dots + x^{40})^8$
 None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
The coefficient of x^{40} in $(1 + x + x^2 + x^3 + \dots + x^{40})^8$

10) The closed form of the generating function obtained by the sequence 1,3,9,27,..... is :

1 point

- $\frac{1}{1+3x}$
 $\frac{1}{(1+x)^3}$
 $\frac{1}{1-3x}$
 $\frac{1}{(1-x)^3}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $\frac{1}{1-3x}$