

Unit 4 - Week 2

Course outline
How does an NPTEL online course work?
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Assignment 2

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

Due on 2020-09-30, 23:59 IST.

One or more options may be correct.

1) Which of the following can be proved by using the method of induction? 1 point

- $1 + 2 + \dots + n = \frac{n(n+1)}{2}$
- $1^2 + 2^2 + \dots + n^2 = \frac{n(n+1)(2n+1)}{6}$
- $1 + 3 + \dots + (2n - 1) = n^2$
- Every $n > 1$ has a prime factor.

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $1 + 2 + \dots + n = \frac{n(n+1)}{2}$
 $1^2 + 2^2 + \dots + n^2 = \frac{n(n+1)(2n+1)}{6}$
 $1 + 3 + \dots + (2n - 1) = n^2$
 Every $n > 1$ has a prime factor.

2) The Number of primes p of the form $4n + 1$ up to 100 is 1 point

- 10
 11
 12
 15

No, the answer is incorrect.
Score: 0

Accepted Answers:
11

3) The number of primes p of the form $4n + 3$ up to 100 is 1 point

- 11
 12
 13
 14

No, the answer is incorrect.
Score: 0

Accepted Answers:
13

4) Which of the following pairs of mathematicians is not associated with the statement or the proof of the prime number theorem? 1 point

- Selberg and Erdős
 Hadamard and de la vallée Poussin
 Legendre and Gauss
 Lagrange and Euclid

No, the answer is incorrect.
Score: 0

Accepted Answers:
Lagrange and Euclid

5) Which of the following sequences of natural numbers will not contain infinitely many primes? 1 point

- $4n + 7$
- $20n + 27$
- $2020n + 179$
- $2021n + 47$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $2021n + 47$

6) Which of the following polynomials does not represent any prime for $n \in \mathbb{N}$? 1 point

- $n^2 + 1$
- $n^2 + n + 4$
- $n^3 - 1$
- $n^3 - n + 1$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $n^2 + n + 4$

7) Which of the following is not the last decimal digit of a square? 1 point

- 2
 5
 9
 7

No, the answer is incorrect.
Score: 0

Accepted Answers:
2
7

8) Which of the following are multiples of 3 modulo 27? 1 point

- 15
 22
 9
 16

No, the answer is incorrect.
Score: 0

Accepted Answers:
15
9

9) The smallest natural number n such that $2n^3 + 4n + 9$ is prime 1 point

- is 5
 is 4
 is 7
 does not exist

No, the answer is incorrect.
Score: 0

Accepted Answers:
does not exist

10) Select the natural numbers n such that $n^2 + 5n + 9$ is not a prime. 1 point

- 1
 2
 3
 4

No, the answer is incorrect.
Score: 0

Accepted Answers:
1
3
4