Module 12 : Number Theory III (?q=onlinecourse/course/43606)

Number Theory Exercise Part III

- **วิชชาภัทร จินดานาถ** previously submitted answers to this quiz/test on 04-Nov-2023 @ 03:26:38 and obtained **11** correct answers out of **12** .
- This test/quiz can be taken many times.
- Correct answers will NOT be revealed after submission.

$\phi(n)\ is\ euler\ function$

$\lambda(n)\ is\ Carmichael\ function$

1 $from$

$x \equiv 3\ mod\ 5$

$x \equiv 5\ mod\ 7$

$x \equiv 7\ mod\ 11$

From previous attempt

$x\ can\ be\ described\ as\ A+B\times k\ if\ k\ is\ integer A,\ B\ is\ constant\ and\ positive\ integer\ find\ B$

385

77

105

55

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2 $which\ following\ statement\ is\ true\ ?$

$1.\ if\ x = 2^p - 1\ and\ p\ is\ prime\ number\ then\ x\ is\ prime\ number$

$2.\ 2^{2^n} + 1\ for\ n\ that\ is\ integer\ is\ always\ prime\ number$

From previous attempt

1, 2

1

2

There is no right statement

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3 *which following statement is true ?*

$1.if\ p\ is\ prime\ then\ \phi(p) = p - 1$

$2.Let\ m, n\ be\ a\ positive\ integer\ and\ gcd(m, n) = 1\ then\ \phi(mn) = \phi(m) \times \phi(n)$

$3.if\ p\ is\ prime\ then\ \phi(p^n) = p^n - p^{n-1}$

From previous attempt

1, 2, 3

1, 2

1, 3

2, 3

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4 *find* $\phi(7)$

From previous attempt

0

2

4

6

---

5 *find* $\phi(15)$

From previous attempt

14

8

10

0

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6 $find\ \phi(729)$

243 From previous attempt

486

728

729

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7 $find\ \phi(10000)$

1000 From previous attempt

4000

5000

9999

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8 *which following statement is true ?*

1.*Let a be a positive integer and p is prime number then* $a^{p-1} \equiv 1\ mod\ p$ From previous attempt

2.*Let* a, n *be positive integer which* $gcd(a, n) = 1$ *then* $a^{\phi(n)} \equiv 1\ mod\ n$

3.*Let* a, n *be positive integer which* $gcd(a, n) = 1$ *then* $a^{\lambda(n)} \equiv 1\ mod\ n$

2,3

1, 2, 3

3

1

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9 $find\ 5^6\ mod\ 7$

From previous attempt

- 0
- 1
- 5
- 6

---

10 $find\ 10^{25}\ mod\ 35$

From previous attempt

- 0
- 1
- 10
- 34

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11 $(in\ this\ question\ "The\ RSA\ example"\ is\ refer\ to\ the\ RSA\ example\ on\ page\ 46\ of\ NUMBER\ THEORY\ FOR\ EVERY\ PART\ file\ (in\ material\ download))$

$from\ the\ RSA\ example\ find\ public\ key\ N, k\ from\ this\ situationwhen\ you\ use\ p = 5,\ q = 7,\ m = 7,\ k'(private\ key) = 5, \lambda(35) = 12$

From previous attempt

- N = 35, k = 17
- N = 12, k = 35
- N = 35, k = 12
- N = 17, k = 7

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12 $if\ public\ key\ N = 15\ k = 7\ and\ private\ key\ k' = 3$

$1.encrypt\ the\ number\ 2$

$2.decrypt\ the\ number\ 5$

From previous attempt

- 7, 5
- 7, 2

8, 5

8, 3

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Previous (?q=onlinecourse/theatre/27087/zaRmX6R7rko)

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