Math for Developers

Problem 1.

Find the 24th, 101st and 251st prime number.

The 24th prime number is: 89

The 101st prime number is: 547

The 251st prime number is: 1597

Problem 2.

Check if the 24th, 101st and 251st prime numbers are part of the base Fibonacci number set. What is their position?

|  |  |  |
| --- | --- | --- |
|  | Part of Fibonacci | Position |
| 89 | Yes | 11 |
| 547 | No | - |
| 1597 | Yes | 17 |

Problem 3.

Find 100!, 171! and 250! Give all digits.

100! = 93326215443944152681699238856266700490715968264381621468592963895217599993229915608941463976156518286253697920827223758251185210916864000000000000000000000000

171! = 1241018070217667823424840524103103992616605577501693185388951803611996075221691752992751978120487585576464959501670387052809889858690710767331242032218484364310473577889968548278290754541561964852153468318044293239598173696899657235903947616152278558180061176365108428800000000000000000000000000000000000000000

250! = 3232856260909107732320814552024368470994843717673780666747942427112823747555111209488817915371028199450928507353189432926730931712808990822791030279071281921676527240189264733218041186261006832925365133678939089569935713530175040513178760077247933065402339006164825552248819436572586057399222641254832982204849137721776650641276858807153128978777672951913990844377478702589172973255150283241787320658188482062478582659808848825548800000000000000000000000000000000000000000000000000000000000000

Problem 4.

You are given three right angled triangles. Find the length of their hypotenuses.

1. Catheti: 3 and 4

2. Catheti: 10 and 12

3. Catheti 100 and 250

We can use the Pythagorean theorem:

(leg 1)2 + (leg 2)2 = hypotenuse

a2 + b2 = c2

1. 32 + 42 = c2

c = 5

1. 102 + 122 = c2

c = 2 sqrt(61)

1. 1002 + 2502 = c2

c = 50 sqrt(29)

Problem 5.

Convert 1234d to binary and hexadecimal numeral systems.

Convert 1100101b to decimal and hexadecimal numeral systems.

Convert ABChex to decimal and binary numeral systems.

|  |  |  |
| --- | --- | --- |
| Binary | Decimal | Hexadecimal |
| 10011010010 | 1234 | 4D2 |
| 1100101 | 101 | 65 |
| 101010111100 | 2748 | ABC |

Problem 6.

Find LCM(1234, 3456).

LCM(1234, 3456)

The LCM is: 2132352.