

Tartalomjegyzék

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Sage

6 points

The exercises should be done via a sage function:

```
def nameofthefunction(input):
    ...
    ...
    return ...
```

Relative primes

3 points

Write a function called `relativeprimes` with a positive integer as input. The output should be a univariate polynomial such that:

- its variable is x
- every coefficient is 1
- only the powers of x should be in the polynomial where exponent less than n and relative prime to n .

Example:

```
>>> relativeprimes(9)
x^8 + x^7 + x^5 + x^4 + x^2 + x
```

Use list comprehension and `sum`

Pythagorean primes

3 points

Find Pythagorean triplets where:

- every term is a positive integer
- they are in a descending order
- the sum of the squares of the last two is the square of the first one

- at least one of the three is a prime

Define a function called `pythagorean` with one input (n) and return all such triplets up to n .

Example:

```
def pythagorean(n):  
    ...  
    ...  
  
pythagorean(100)  
  
[(5, 4, 3),  
(13, 12, 5),  
(17, 15, 8),  
(29, 21, 20),  
(25, 24, 7),  
(37, 35, 12),  
(41, 40, 9),  
(53, 45, 28),  
(73, 55, 48),  
(61, 60, 11),  
(97, 72, 65),  
(89, 80, 39),  
(85, 84, 13)]
```

Handing in

Send the code of the functions in the email!

Deadline

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