

Yet another pattern in the ordered pairs that give a prime number...

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Let's examine the relationship between the given sequence and the odd numbers in the ordered pairs. Given Sequence:

The sequence is:

$\{5, 8, 9, 8, 5, 0, -7, -16, -27, -40, -55, -72, -91, -112, -135, -160, -187, -216, -247, -280, -315, -352, -391, -432, -475, -520, -567, -616, -667\}$
 $\{5, 8, 9, 8, 5, 0, -7, -16, -27, -40, -55, -72, -91, -112, -135, -160, -187, -216, -247, -280, -315, -352, -391, -432, -475, -520, -567, -616, -667\}$

Ordered Pairs:

The ordered pairs are:

$\{\{12, 5\}, \{20, 13\}, \{26, 19\}, \{30, 23\}, \{42, 35\}, \{44, 37\}, \{56, 49\}, \{86, 79\}, \{102, 95\}, \{104, 97\}, \{110, 103\}, \{132, 125\}, \{146, 139\}, \{152, 145\}, \{162, 155\}, \{174, 167\}, \{180, 173\}, \{182, 175\}, \{186, 179\}, \{194, 187\}, \{204, 197\}, \{210, 203\}, \{216, 209\}, \{240, 233\}, \{254, 247\}, \{260, 253\}, \{264, 257\}, \{272, 265\}, \{284, 277\}\}$
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Odd Numbers in Ordered Pairs:

The list of odd numbers in ordered pairs is:

$\{5, 13, 19, 23, 35, 37, 49, 79, 95, 97, 103, 125, 139, 145, 155, 167, 173, 175, 179, 187, 197, 203, 209, 233, 247, 253, 257, 265, 277\}$
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Relationship with the Sequence:

We can check the given sequence and compare it with the differences between the odd numbers in the ordered pairs. Let's calculate the differences:

mathematica

(* List of odd numbers in the ordered pairs *)

$\text{odd} = \{5, 13, 19, 23, 35, 37, 49, 79, 95, 97, 103, 125, 139, 145, 155, 167, 173, 175, 179, 187, 197, 203, 209, 233, 247, 253, 257, 265, 277\};$

(* Calculate differences *)

differences = Differences[odd]

(* Display differences *)

differences

Calculated Differences:

When running the code, the differences are:

{8,6,4,12,2,12,30,16,2,6,22,14,6,10,12,6,2,4,8,10,6,6,24,14,6,4,8,12}\{8, 6, 4, 12, 2, 12, 30, 16, 2, 6, 22, 14, 6, 10, 12, 6, 2, 4, 8, 10, 6, 6, 24, 14, 6, 4, 8, 12\}

We can see that the differences do not correspond directly to the given sequence, but the values can be related to some specific operation on the odd numbers of the ordered pairs.

The cumulative sum of the result of the differences +5 is equal to the second odd number of the ordered pairs

The consecutive sum of the even numbers minus the consecutive sum of the odd numbers of the ordered pairs always gives 14.

[14/11 12:57] Luis: Sent by you:

I have numbers 5,13,19 that continue with odd numbers and the consecutive accumulated sum of the difference+5 generates the other odd numbers that are the second number of ordered pairs whose difference between the first even numbers of each ordered pair is equal to the difference between the odd numbers...and whose difference between the even number of the ordered pair and the odd number of the ordered pair is equal to 7... what are these numbers? [14/11 13:07] Luis: The sum of the first previous pair with the second subsequent odd number minus the odd number of the previous ordered pair is equal to the even number of the subsequent ordered pair

[14/11 14:40] Luis: The last even number of the ordered pair minus the first even number of the first ordered pair plus the first odd number of the first ordered pair is equal to the last odd number of the last ordered pair