as, x=2^p/2 y=2^p-2/2 = x-1 z=Mp=x+y=x²-y² z²=MPS=PN+OC=4CR+1 PN=xz PNS=x²=CR+x OC=yz OCS=y² CR=xy=y+y²=x²-x 2y+1=y-next

The Exponential Power of 2 as it interferes with the MPS

1-3-7-15-31-63-127-255-511-1023-2047-4095-8191

The Running Sum (Σ) defines: The MPS-Mp-PN-OC-CR

$z^2 - 2(y^2) = z\text{-next} = xz + y = 2x^2 - 1$

The curved BLACK arc lines follow the exponential power of 2 --- 2^n.

The YELLOW and GREEN lines follow the Running Sums (Σ=z=Mp) of the exponential power of 2 --- 2^n. (Purple)

The thin dotted BLACK lines show that the exponential power of 2 --- 2^n --- falls midway ---in the center --- of the PNS along the way to the next MPS or PN crossing on the PD.

Follow the Running Sums (Σ=z=Mp) of the exponential power of 2 --- 2^n=x as z=2²-1=3 the YELLOW line goes to the square of 3=9= MPS on the PD @ p=2; under the 9 is 7 and a GREEN line runs diagonally from it to the 7=z=2^3 -1 on the Axis; a YELLOW line goes to the square of 7=49=MPS on the PD @ p=3; below 49 is 15 and a GREEN line runs diagonally to 15=z=2^4 -1 on the Axis; a YELLOW line goes to the square of 15=225 on the PD; under the 225 is 31; a GREEN line runs diagonally from it to 31=z=2^5 -1 on the

See BIM-MPS: Details, Part II

$(2(x^2 + y^2) - 1)^{1/2} = z$

$(2(x^2 + y^2) - 1) = z^2 = x^4 + y^2 + 2xy$

$x^2 + y^2 = (z^2 + 1)/2 = 2xy + 1$

$OCS + PNS = (z^2 + 1)/2 = 2CR + 1$

x	y
PNS	CR
x^2	xy

z	
y^2	y^2
OCS	OCS

-1

p=2 p=3 p=5 p=7

PD=16²=256=PN crosses PD

DIAMOND NPS of 32 inset

SQUARE NPS of 32 inset

RED LINES = NON-AR

BLUE LINES = AR

The first four Mersenne PRIME - Perfect Number Squares on the BIM

Every Mersenne Prime Square has 6 unique embedded AREAS:

1. MPS: Mersenne Prime Square
2. PN: Perfect Number
3. OC: ODD Complement
4. PNS: Perfect Number Square
5. OCS: ODD Complement Square
6. CR: Complement Rectangle (repeated)

Each AREA is shown on the BIM as STEPS from the DIAGONAL.

STEPS = x/4, while x/2•Σ gives values.

Σ=sum of the coordinates.

Each LEFT Axis value = 2^n -1 (RED) and 2^n (BLACK). The Mp = z = 2^p -1, when p = Mersenne PRIME n.