What is the network address if one of the addresses is 167.199.170.82/27?

The prefix length is 27

We must keep the first 27 bits as it is and change the remaining bits (5) to 0s.

The 5 bits affect only the last byte.

The last byte is 01010010.

Changing the last 5 bits to 0s, we get 01000000 or 64.

The network address is 167.199.170.64/27.

What is the first address in the block if one of the addresses is 140.120.84.24/20?

for the third byte we keep the bits corresponding to the number of 1s in that group. n The first address is 140.120.80.0/20.

Find the number of addresses in the block if one of the addresses is 140.120.84.24/20

The prefix length is 20.

The number of addresses in the block is 2^{32-20} or 2^{12} or 4096.

Find the last address in the block if one of the addresses is 140.120.84.24/20.

The first address obtained is 140.120.80.0

The number of addresses in the block is 2^{32-20} or 2^{12} or 4096.

We add the mask complement to the beginning address to find the last address

Given mask is 20 one's and 12 zero's, the complement will be 20 zero's and 12 one's.

So the mask complement becomes, 00000000 00000000 00001111 11111111

Which is equivalent to 0.0.15.255

140 . 120 . 80 . 0

0 . 0 . 15 . 255

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140 . 120 . 95 . 255

So, the last address is 140 . 120 . 95 . 255/20

Find the block if one of the addresses is 190.87.140.202/29

The first address is 190.87.140.200/29

The number of addresses is 2^(32−29) or 8

The last address is 190.87.140.207/20