

So, finally, the number is

$$(-1)^s 2^{C-1023} (1+f) = (-1)^0 2^{11} (1.57421875) = \\ = 2048 (1.57421875) = 3224$$

The smallest ^{positive} number that can be represented this way has all zeroes and 1 in the rightmost position of the mantissa

$$2^{-1023} (1 + 2^{-52}) \approx 10^{-308}$$

The largest number has a leading 0 (as a sign indicator) and ones in the rest of the bits. It is equivalent to

$$2^{1024} (2 - 2^{-52}) \approx 10^{308}$$

Numbers occurring in calculations that have a magnitude less than the smallest number result in underflow and are generally set to 0. Numbers greater than the largest number result in overflow and typically cause the computation to halt.

$$\begin{aligned} & 1 + \frac{1}{2} + \frac{1}{4} + \dots + \frac{1}{2^{52}} \\ & \frac{1 - (\frac{1}{2})^{53}}{1 - \frac{1}{2}} = 2 - (\frac{1}{2})^{52} \\ & = (2 - 2^{-52}) \leftarrow \text{mantissa} \end{aligned}$$

$$\begin{aligned} & 2^{10} + 2^9 + \dots + 1 \\ & 2^{11} - 1 = 2047 \\ & C - 1023 = 1024 \\ & \text{Character.} \end{aligned}$$