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(1) My career goals are to work in the finance world, more specifically global markets using complex mathematics to price options, stocks, etc.

(2) My hobbies are playing chess, swimming, volleyball, and piano.

(3) A rational number that can be represented as the quotient of two integers where the denominator is not equal to 0.

(4) The sum of two rational numbers is always going to be a rational number because when you sum up two fraction you will either get another fraction or an integer value, both of which are rational.

(5) the sum of two irrational numbers does not have to give an irrational number
For ex: $(2+\sqrt{3})$ and $(2-\sqrt{3})$ are two irrational numbers when summed together the result is 4, a whole number.

⑥ not sure how to prove infinite many primes.

⑦ assume rationality at first of $\sqrt{5}$

$$\frac{p}{q} = \sqrt{5} \qquad \frac{p^2}{q^2} = 5$$

$$p^2 = 5q^2$$

if both $p^2$ and $q^2$ have an even # of prime factors (any # squared has even # of prime factors) $5q^2$ has an odd # of prime factors due to the 5

our equality statement would mean that they have the same amount of prime numbers, but $p^2$ has an even amount, and $5q^2$ has an odd amount

therefore the assumption that $\sqrt{5}$ is rational, is not possible.