Problem 2- Interview

Interviewee- Dr. Parveen Lata
She is an Associate Professor in Department of Basic and Applied Sciences in Punjabi University. She has done M.Phil in Number Theory and Applied Mathematics. She has done her PhD in problems in Micropolar Thermoelastic media. She has almost 20 years of teaching experience in the field of Mathematics.

Q1- What field are you researching in Mathematics?
A1- Applied Mathematics, Topology and Algebra.

Q2- Are there other fields in mathematics you are interested in?
A2- I have interests in Geometry and Number systems.

Q3- How long have you been working in this field?
A3- More than 20 Years.

Q4- Have you heard of some special irrational constants in the field of Mathematics? Can you give some examples?
A4- I have researched on some irrational constants like ,e,Khinchin's Constant (K).

Q5-Have you heard of the Irrational constant "Golden Ratio(ϕ)"?
A5- Yes. I have studied about the golden ratio during my research.

Q6- What is the Golden Ratio?
A6- Two quantities are in the golden ratio if their ratio is the same as the ratio of their sum to the larger of the two quantities. For quantities a and b such that $>$ b > 0,

$$\frac{a+b}{a} = \frac{a}{b} \stackrel{\text{def}}{=} \phi$$

Q7-How do you derive its value?
A7- It is the solution to the quadratic equation $x^2 - x - 1 = 0$.

Q8- What is the value of Golden Ratio?
A8- The approximate value of golden ratio is 1.618

Q9-What do you think are the applications of the Golden Ratio in mathematics?
A9- The golden ratio is used mostly in the Geometry to create designs that are in proportions and are pleasing to the eye. It is not used as such in Mathematics directly but even the ratio of consecutive numbers in fibonacci series are close to the golden ratio.

Q10- Are there any other fields outside of Mathematics that use the Golden Ratio?
A10- Golden ratio is used extensively in Architecture, Art, Plastic Surgery to name a few. Golden ratio appears in surprising frequency in the nature as well.

Q11- Could you give me some examples of its use in architecture or art?
A11- The Great Pyramids of Gaza, Parthenon in Athens, Michelangelo's The Creation of Adam on the ceiling of the Sistine Chapel and Da Vinci's Mona Lisa are some of the famous examples that use the Golden Ratio. Even the famous painting "The Last Supper" uses Golden ratio many times.

Q12- Why is the golden ratio so pleasing to the eye?
A12- Our brain unknowingly prefers objects that follow the golden ratio. Even the plastic surgeons follow the golden ratio during facial surgeries so that the results look natural. It's a subconscious attraction and even tiny tweaks that make an anything closer to the Golden Ratio have a large impact on our brains.

Q13- What device do you generally use for complex calculations in your field?
A13- I generally use a scientific calculator.

Q14- Would you like to include Irrational constants like Golden ratio in the calculator?
A14- Yes. I would prefer if the calculators could directly provide the value for such irrational constants which are used frequently in my research.

Q15- What kind of interface would you like for the device? Would you prefer a desktop Application, Web Application or a mobile Application?
A15- I would prefer a Mobile or desktop application with an easy to use interface.