History of Math | Quiz 8

1) $\nabla^2 u = 0$ which is $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} + \frac{\partial^2 u}{\partial z^2} = 0$

Issac Newton / Leibniz

2) Brunswick, Germany, his father was a ~~buth~~ butcher and a businessman

3) Yes you an. It was guoss

④ $G = \{0, 1, 2, 3, 4, 5\}$

a)

- The operation is closed since if we add any two numbers in G and then do modulo 6, the result will be between 0 and 5 inclusive, hence is in G.
- There is an identity element 0 such that $(a+0) \bmod 6 = a \bmod 6$
- There is an inverse b for every element a such that $(a+b) \bmod 6 = 0$. For $0 \to 0$, $1 \to 5$, $2 \to 3$, $4 \to 2$, $5 \to 1$. Hence there's an inverse for all elements.
- Also the operation defined is associative since $(a+b) \bmod 6 = (b+a) \bmod 6$

Hence it is a group

b) No because the subset does not contain the indentity element 0 nor is it closed. $(3+5) \bmod 6 = 2$ which is not in the set.

c) 0 is in the set, hence contains identity

Show closed

$(0+2) \bmod 6 = 2$

$(0+4) \bmod 6 = 4$

$(2+0) \bmod 6 = 2$

$(2+2) \bmod 6 = 4$

$(2+4) \bmod 6 = 0$

$(4+0) \bmod 6 = 4$

$(4+2) \bmod 6 = 0$

$(4+4) \bmod 6 = 2$

$(0+0) \bmod 6 = 0$

Hence ~~all~~ it all stays in the set, hence operation is closed and it's a subset.