

Larry Vo

Quiz 8

1. $\frac{\partial^2 V}{\partial x^2} + \frac{\partial^2 V}{\partial y^2} + \frac{\partial^2 V}{\partial z^2} = 0$ but found by Euler first

2. Gauss was born in the German city of Brunswick.
His father was a day laborer

3. The sides of the regular polygon of 17 sides
can be constructed with a compass and ruler alone
and this was proved by Gauss.

4. $G = \{0, 1, 2, 3, 4, 5\}$

a. First 0 is the identity since any member added to 0 is just the identity. Second since we have an identity then we have an inverse. Thirdly, it is associative since $a * (b * c) = (a * b) * c$ for any member. Thus it is a group.

b. $\{1, 3, 5\}$ is a subset of G but not a subgroup since it does not have the identity member in it.

c. $H = \{0, 2, 4\}$ is a group since it has the identity, inverse, and is associative. Now "multiply" any two members in H and you will still be in H so $0 * 2 = 2 \in H$
 $2 * 4 = 6 = 0 \in H$, $0 * 4 = 4 \in H$ so it is a subgroup of G .

d. $H = \{0, 2, 4\}$

Pick $a_1 = 1$, $a_1 * H = \{1, 3, 5\}$
No more in G

$$G = 0 * \{0, 2, 4\} \cup 1 * \{0, 2, 4\}$$