Real Quiz # 8 for Dr. Z.'s MathHistory

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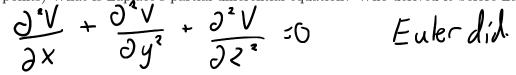
Email DrZlinear@gmail.com as soon as I tell you (around 3:15pm)

Subject: q8

with an attachment called

q8FirstLast.pdf (e.g. q8PaulErdos.pdf)

1. (2 points) What is Laplace's partial differential equation? Who derived it before Laplace?



2. (2 points) What is the name of the city where Carl Friedrich Gauss was born? What was the occupation of his father?

Brunsuick, butcher

3. (2 point) Can the side-length of a regular polygon of 17 sides (inscribed in a circle of radius 1) be constructed with compass and ruler alone? Who proved (or disproved) it?

yes, Gauss proved it

4. (4 points altogether)

Consider the set

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

where the "multiplication", let's call it '*', is addition modulo 6, for example: 2'*'3=5, 4'*'5=3.

a (1 point) Show that it is a group.

b (1 point) Is the subset $\{1, 3, 5\}$ of G a subgroup of G? Explain!

yes

 ${\bf c}$ (1 point) Show that $H=\{0,2,4\}$ a subgroup of G.

 ${\bf d}$ (1 point) Find the coset decomposition of G with respect to H.