Real Quiz # 9 for Dr. Z.'s MathHistory

NAME: (print!) Quin Buck

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

Subject: q9

with an attachment called

q9FirstLast.pdf (e.g. q9PaulErdos.pdf)

1. (2 points) What is the name of the French mathematician who did fundamental work in Number Theory independently, and at the same time, as Gauss, and what is the name of the innovative Geomery textbook that he wrote, that broke away from Euclid?

Poincaré

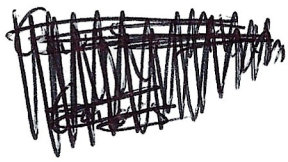
2. (2 points) Who was the most original pupil of Gaspard Monge, and what is the name of the book that he wrote? What does it contain?

Dupin

3. (1 point) What was the position of Evariste Galois's father?

Politician and mayor of a village

4. (1 point) What is the name of the famous French author that shared Cauchy's conservative political views, as well his capacity for an infinite amount of work?

 Balzac

5. (4 points total) (a) (1 point) What is

$$I = \int_{-\infty}^{\infty} e^{-x^2/2}\,dx \quad ? = \sqrt{2\pi}$$

(b) (3 points) Prove it!

$I^2 = \int_{-\infty}^{\infty}\int_{-\infty}^{\infty} e^{-x^2+y^2/2}\,dy\,dx$

$I^2 = \int_0^{\infty}\int_0^{2\pi} re^{-r^2/2}\,d\theta\,dr$

$I^2 = 2\pi \int_0^{\infty} re^{-r^2/2}\,dr \qquad u = r^2/2,\ du = r\,dr$

$I^2 = 2\pi \int_0^{\infty} e^{-u}\,du$

$I^2 = 2\pi\,(-e^{-\infty} - (-e^0))$

$I^2 = 2\pi \Rightarrow I = \sqrt{2\pi}$