
History of Mathematics

Math 395 Spring 2010
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Fowler 310 MWF 10:30am - 11:25am
<http://faculty.oxy.edu/ron/math/395/10/>

QUIZ #3: 04/16/2010

NAME: _____

TOTAL _____/30

MATH PART I:

(5 points) Verify a result of Descartes that the sum of the reciprocal of the roots of an arbitrary quadratic equation written $1 + c_1x + c_2x^2 = 0$ is equal to $-c_1$. [HINT: Recall that the quadratic equation in the form $(x - a)(x - b) = 0$ has roots at a and b .]

MATH PART II:

(10 points) Consider $y = \sqrt{x}$. Use either Newton's method of fluents and fluxions or Leibniz' method of differentials to show that $\dot{y} = \frac{\dot{x}}{2\sqrt{x}}$ or $dy = \frac{dx}{2\sqrt{x}}$. [For half-credit you can use the modern limit definition of the derivative to differentiate the given function.]
Show all your work!

HISTORY PART I: LONG-ANSWER QUESTION (5 points).

(5 points) If Newton or Leibniz had never been born, who do you think would have invented Calculus? **WRITE LEGIBLY and provide a full paragraph (i.e. multiple sentences) to support your answer!**

HISTORY PART II: SHORT-ANSWER QUESTIONS (5 points)

Write down whether the following sentences are either TRUE or FALSE.

- A. _____ Newton and Leibniz were uninterested in who received final credit for the invention of Calculus.
- B. _____ Fermat was able to build upon the work of Viète to solve algebraic problems.
- C. _____ Kepler was always a stickler for matching theory to experimental observations.
- D. _____ Galileo was able to build upon the work of the Bernouilli brothers to solve the catenary problem.
- E. _____ Descartes believed geometry and algebra were two distinct, unrelated fields of study.

HISTORY PART III: MATCH QUESTION (5 points)

Match the concept, symbol or equation with the name of the one Mathematician most closely associated with it.

A: The integral or \int

B: logarithms

C: Solution of $x^3 + cx = d$

D: Parabolic motion of projectiles

E: Σ

- 1: Isaac Newton**
- 2: Gottfried Leibniz**
- 3: Joseph-Louis Lagrange**
- 4: Pierre-Simon Laplace**
- 5: Leonhard Euler**
- 6: Rene Descartes**
- 7: Pierre de Fermat**
- 8: John Napier**
- 9: Gerolamo Cardano**
- 10: Galileo Galilei**
- 11: Johannes Kepler**