Mathematics-Science 380 – History of Mathematics TRENT UNIVERSITY 2004-2005

Assignment #11 – Due 28 March, 2005.

Do any two of 1–3.

- 1. The priority dispute between Leibniz and Newton over who discovered calculus first was mostly carried on by other mathematicians acting on their behalf, with or without encouragement and permission. Who were some of these individuals and what did they do to further the dispute? [10]
- 2. How likely is it that calculus would have been discovered soon anyway if neither Newton nor Leibniz had done so? Why? [10]
- **3.** What was Felix Klein's Erlanger program, which he proposed in 1872? What was the outcome? *[10]*
- **Bonus.** What was David Hilbert's Tenth Problem? If the answer to the problem had turned out to be 'yes', what might the consequences have been for Fermat's Last Theorem? [2]

Nature and Nature's laws lay hid in night, God said, 'Let Newton be,' and all was light. *Alexander Pope*

Unified Field Theory

In the beginning there was Aristotle. And objects at rest tended to remain at rest, And objects in motion tended to come to rest, And soon everything was at rest, And God saw that it was boring. Then God created Newton, And objects at rest tended to remain at rest, But objects in motion tended to remain in motion, And energy was conserved and momentum was conserved and matter was conserved. And God saw that it was conservative. Then God created Einstein, And everything was relative, And fast things became short, And straight things became curved, And the universe was filled with inertial frames. And God saw that it was relatively general, but some of it was especially relative. Then God created Bohr, And there was principle, And the principle was quantum, And all things were quantified, But some things were still relative, And God saw that it was confusing. Then God was going to create Furgeson, And Furgeson would have unified, And he would have fielded a theory, And all would have been one, But it was the seventh day, And God rested. And objects at rest tend to remain at rest.

But the Devil laughing 'Ho! Let Einstein be!' restored the *status quo*. Anonymous

Tim Joseph