MTH 6610 - Final Exam

Term V - 2022

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Answers to the questions below come from the reading of pages 287-432

1. Just as learning, and particularly mathematics, was being revived in the 13 Century, what event(s) brought an immediate end to the learning in the 14th Century? (Be somewhat descriptive and specific here)

2. What event and two developments (inventions) are credited with reviving learning (and mathematics) in the 15th Century? (Provide explanations as to how these things contributed to the revival of learning)

3. What was Francois Vieta's innovation, and how did it help to further the study of algebra?

4. What trick did Cardano use to solve general cubic equations?

5. What mathematical fact was established by Paolo Ruffini and Niels Able? What does this really mean?

6. For what contribution to mathematics is John Napier credited?

7. What mathematical pioneers are generally credited with "paving the way" for the development of Calculus?

8. How did Newton acknowledge the previous fact?

9. What do the words "geocentric" and "heliocentric" mean, and (historically speaking) what is the relevance/origin of these words?

10. What explanation is given for the drastic increase in mathematical Achievements during the 16th and 17th Centuries?

11. What advance was made by Simon Stevin?

12. What improvement of an already existing mathematical tool was made by Henry Briggs?

13. What do Jobst Burgi and John Napier have in common?

14. What was an "immediate" technological consequence of Napier's work?

15. How did Kepler approach the computation of the area of a circle and the volume of a sphere (Be somewhat specific here).

16. What laws of planetary motion were advanced by Kepler, and what does the second law mean?

17. For what Philosophical "maxim" is Rene Descartes known, and (briefly) how do you explain the meaning?

18. What was Descartes' most important contribution to mathematics?

19. Descartes work inspired the use of what mathematical tool, common to all who study algebra today?

20. What two observations, regarding the roots of polynomials, did Descartes make?

21. What association more than likely influenced Isaac Newton's development of Calculus?

22. What three "discoveries" did Isaac Newton make, while on a two year exile from London, for the purpose of avoiding "the plague"?

23. What is the basic idea behind Newton's law regarding planetary motion?

24. What later "theoretical breakthrough," regarding gravity, allowed Newton to put the finishing touches on his law, regarding planetary motion? (This is something that Newton had ASSUMED to be true, earlier on, but was unable to prove at that time.)

25. What reasons can be given for the fact that Newton's development of calculus was not acknowledged right away?

26. How are Isaac Newton and Gottfried Leibniz tied together historically?

27. To what extent did Leibniz make progress in the development of his contribution to mathematics? (i.e., What results, well known today, did he derive?)

28. What contribution, made by Jean d'Alembert, relates to the common field of study of Newton and Leibniz?

29. What "international feud" resulted from the work of Newton and Leibniz, and how did this effect mathematicians on both sides? What was the result?