**Presentations05 Italian Renaissance**

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|  | **Topic/Exercise** | **Presenter** |  |
| 1 | Your textbook should have some exercises on the Fibonacci numbers. Select some to do. |  |  |
| 2 | If denotes the Fibonacci sequence, show how to calculate Hint (if you want to do it without looking up a proof): replace with and look at that equality; then multiply top and bottom with . |  |  |
| 3 | Consider the general quartic equation: substitute  and determine the value of that makes the term vanish. |  |  |
| 4 | Derive the cubic equation. (Use your textbook or my notes.) |  |  |
| 5 | Derive the quartic equation. (Use your textbook or my notes.) |  |  |
| 6 | Explain the Ptolemaic system of the solar system. Explain retrograde motion and how Ptolemy addressed it. |  |  |
| 7 | Use Newton’s laws to prove Galileo’s claim that objects fall at the same rate from the same height regardless of their weights (neglecting air resistance.) Hint: use his law of Gravity plus his laws of motion. |  |  |
| 8 | [If you’ve had differential equations and want a challenge.] Use the laws of Newton to prove one of more of Kepler’s laws. |  |  |
| 9 | What is the “problem of points”? Give an example and solve it. |  |  |
| 10 | Explain how logarithms were invented and why. |  |  |
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