


3-1-1999

A Day in the Life of Diophantus (c. 251 A.D.)

Rebecca Pekrul
Washburn University

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Recommended Citation

Pekrul, Rebecca (1999) "A Day in the Life of Diophantus (c. 251 A.D.)," *Humanistic Mathematics Network Journal*: Iss. 19, Article 17.
Available at: <http://scholarship.claremont.edu/hmnj/vol1/iss19/17>

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Mathematical Fiction

Pat Mower
Department of Mathematics and Statistics
Washburn University

The course History of Mathematics provides an excellent forum for students and educators to explore different approaches to understanding mathematics and the development of mathematics. During the fall of 1996, students enrolled in this course were asked to consider the aesthetic and literary qualities of mathematics and mathematics history through their creations of fiction. The assignment and three examples of their efforts follow.

ASSIGNMENT:

Write a piece of mathematical fiction (poem, short story, play, letter to a mathematician, etc.) that uses some of the themes or a theme or mathematician explored or that will be explored later in this class.

GRADING:

Content / accuracy / relevancy (40 points)

Creativity / effort (30 points)

Mechanics / clarity (30 points)

A Day in the Life of Diophantus (c. 251 A. D.)

Rebecca Pekrul

"This is Good Morning Empire, coming to you from our studio in downtown Rome on this very sad day in A. D. 251. Earlier this week we were all shocked and saddened to learn of the death of Emperor Decius during a battle near the city of Dobruja. We will hear more on this sad story later in our broadcast.

Also, coming up we will have a report from the Weather Desk where Seeum Clearly is watching the sky for us, and later we will go to our Man on the Street reporter, Gofar A'Field, for the latest of his reports on "Future Historical Figures," but first to our news desk where Telly True has the year's top stories."

"Thank you, Talkum Muchly. Our top story this year is the shocking news of Emperor Decius' violent death near Dobruja, where his troops have been valiantly repelling yet another invasion by those vicious Goths. These barbarians have been sacking and pillaging in the region again despite numerous pay-offs and a negotiated cease fire accord.

"Decius was in the area to encourage regional officers to take a stronger military stand against this type

of incursion on the Empire. There are rumors of disloyalty and intrigue flying in all levels of the military this morning.

"Senate investigators are on the scene but are not speaking to reporters because some of the rumors and allegations involve high ranking officers. The person whose name is most frequently mentioned by anonymous sources close to the investigation is, in fact, Gaius Vibius Trebonianus Gallus, who is the highest ranking military officer on the scene. In fact, he is one of the principal candidates for the next Emperor.

"Members of Gaius' personal staff have had no comment, except to confirm that they believe that Gaius will announce his decision on whether to accept the office of Emperor at an appropriate time in the not too distant future. Private sources close to the Citizen believe he will assume the office under the official name E. Valerius.

"Reaction from the Senate is as divided as that august body was during Decius' confirmation hearings just two years ago. Those who were supporters of E. Phillip I are as gleeful as they can be on such a dis-

turbing occasion as this, feeling that this is his just desserts for having been proclaimed Emperor by the military while Phillip was still living. Certain Senators have been heard to mumble "He who lives by the sword, dies by the sword."

"Those Senators who were less influenced by Phillip have expressed feelings from weary disbelief to total outrage at this affront to the power of Rome and the nature of this august body.

"In the larger community there are many who have expressed relief at the Emperor's death. A group of persons previously identified as Christians reminded our reporter of the martyrdom of Pope Fabian last year, the exile within the past year of such persons as Cyprian, Bishop of Carthage, and the imprisonment and torture of Origen, a leading churchman. Members of the formerly Christian group, sometimes known as lapsis, or lapsed Christians, have hopes that they will be able to resume their previous religion without fear of the next Emperor. Those who accepted exile rather than bow their knee to Rome have harsh words for those who publicly repudiated their beliefs under the threat of Roman punishment. Many knowledgeable sources believe there will be a great deal of controversy within the so-called Christian community regardless of the beliefs and actions of the next emperor.

"In other areas of the empire, the Parthians are taking advantage of the continuing chain of frequent deaths and apparent weaknesses in Roman leadership to make threatening moves toward our borders. At present we have not seen any major cities fall, but some feel that can change rapidly in the near future if our military and civil governments don't develop a more unified front. The military is asking for additional revenues to pay for border defenses in all areas, while the Senate is complaining of falling tributes and a lack of new slaves in recent years.

"In other news the Agricultural Minister of the Nubian Empire has announced that this year's crop outlook is very poor. "The soil of this region is not able to maintain the current level of agricultural demand. Regional famine is a very real danger in the near future if the Gods do not hear our prayers and intervene soon." There have also been some reports of attacks on the trade routes through Nubia. Rival trad-

ers may be responsible for the attacks, but so far only a few nomads have been identified as the culprits.

"From the port of Adulis in Ethiopia there are good market reports today. Several caravans have arrived with iron, gold, rhino horn, assorted animals and slaves. Also in port are ships from several trading partner countries with cargoes of weapons, wine and cloth. The Harbor Master at Adulis says trade is brisk, and that more docks and piers are available at very attractive rates. Call for details.

"We now take you live to Alexandria, Egypt, where our Man on the Street Reporter, Gofar A'Field, is waiting to show you that wondrous city and one of its leading citizens. Gofar, can you hear us?"

"Yes, thank you, Telly. As you can see, I am standing on the edge of the Red Sea in the Port of Alexandria. It is a very well planned seaport, as one would expect of a city built by the order of Alexander the Great. The streets are straight, and laid out in legion like grids with elegant colonnades on the principal avenues.

"On the east end of the harbor is the upper class section of the city, known as the Bruchheim. This is where the aristocracy built their magnificent homes during the time of Alexander and the Ptolemies. Today some of the most elegant homes in the area are occupied by Roman administrators and military leaders.

"As we continue along the harbor you can see the Serapeion and then the Soma, which is the mausoleum of Alexander the Great and the Ptolemies. Next is the Temple of Poseidon and the Museum/Library complex. The final buildings of note are the Theater and the Emporium Marketplace, where most of the social and commercial life of the city is conducted.

"Our destination today was a small house near the Library where we dropped by the home of the noted mathematician Diophantus. There we were privileged to observe a normal day in the life of this "Future Historical Figure." We will now roll the tape which was shot earlier in the home of our subject and his lovely wife."

(Roll Tape)

Wife: "Diophantus, I'm headed to the market. Is there

anything that you need?"

Diophantus: "Yes, I need more paper. Would you pick me up another papyrus or two?"

W: "What do you mean, another papyrus? You just got a whole new papyrus a week ago. What did you do with all of that?"

D: "Well, don't you remember that Anatolius was here Monday, Wednesday and Friday?"

W: "So?"

D: "So, we were working on Book I of *Arithmetica*."

W: "Oh, that again!" When are you going to quit adding to that stu, ah, book of yours? Aren't you ever going to quit wasting paper on that?"

D: "What do you mean, 'wasting paper,' woman? Don't you know that the whole world is waiting impatiently to see my latest mathematical solutions and discoveries in number theory?"

W: "The whole world, huh? Just how soon are they all going to beat down our door to pay for a copy of this magnificent scroll? I still haven't seen anyone except the librarian at the Serapeum ask for a copy, and that's just because he's supposed to have a copy of everything written!"

D: "That's not true, Bishop Dionysius wants a copy too."

W: "Sure, just because you dedicated it to him! Which, by the way, was a very politically incorrect move if you ever wanted to go on a Roman Holiday, since Emperor Decius has been feeding Christians to the lions!"

D: "Well, even so, wife, what I'm doing is important even if there aren't many people who appreciate it. How many copies of Euclid's *Geometry* do you suppose were made the first year or so after it was written?"

W: "So you're saying that this *Arithmetic* of yours is as important as Euclid's *Geometry*?"

D: "Yes, I am! Nobody has ever done much in the way of solving two quadratic equations at once. The Egyptians and Greeks up to now have just been messing around with a combination of linear and quadratic equations, but I'm the first to work with two quadratics simultaneously!"

W: "How many of these wonderful problems are you planning to record for posterity?"

D: "Well, I haven't entirely decided yet, but 130 seems like a good number."

W: "How many papyri is that going to take?"

D: "Oh, somewhere around 13."

W: "Thirteen! That's preposterous! Who's ever heard of one man writing 13 papyri full of arithmetical nonsense?"

D: "What's wrong with thirteen? I'm sure Euclid wrote at least that many *Geometry* books."

W: "So? You think you have to use enough papyrus to wallpaper the whole house (as if this place were big enough to compare with a mouse hole) just to write as many books as some Greek geometer who's been dead for 500 years!"

D: "Well it takes a lot of paper to write out each problem in its entirety and then solve the problem in precise terms. I have to make it clear what I'm about. It wouldn't be a very good text if the reader couldn't easily understand what was written."

W: "What do you mean write out the problem? Show me an example."

D: "We wish to find two square numbers such that the excess of the larger over the smaller, when subtracted from the larger, leaves a square number, and also, when subtracted from the smaller, leaves a square number."

W: "Well, isn't there a shorter way to write it?"

D: "NO!"

W: "Oh, there has to be. See, here's my shopping list."

<She writes on board.> 1 pp/M, 15 poms, 3 pt o.oil, 5# om, 5# che/EmC; 5 yd wht lin, 8 yd gy cot /WRM; see AG/bbsit Wed., ret/Ms rpin.

D: "So, what's that supposed to mean?"

W: "It says: one papyrus from Millitonius' Officius Maximumis. Fifteen pomegranates, three pints of olive oil, five pounds of oatmeal, and five pounds of cheese from Emporium Centrius. Five yards of white linen cloth and eight yards of gray cotton cloth from West Ridge Mallius. See if Annalisa Galivantius will baby sit while I go to Alter Guild meeting on Wednesday. Return Matilda's rolling pin. Now, how would you feel if I wrote that all out in complete and logical sentences? I'd use paper as fast as you do, instead of

just a scrap now and then!"

D: "I see what you mean. It is a bit shorter your way. Let me work on this a bit. I guess instead of writing 'the unknown quantity' I could write 'x' and instead of 'the unknown quantity squared' I could write 'x².'"

W: "Well that's a start, but I hope you can improve on it some more."
(END TAPE)

"This has been a 'Future Historical Figure' report, live from Alexandria. Egypt. I am Gofar A'Field saying good bye for all of the Good Morning Empire staff and reporters. Stay tuned for your local news."

Limericks on the "Century of Genius"

Thomas J. Lipp

In the century of genius they reigned,
When great strides in Math were gained.
From 16- to 1720
Arose brilliant minds o' plenty,
'Though things 'tween church and reason were strained.

Galileo (1564-1642)

Galileo found great hope
In improving the telescope.
With Rome he disputed,
When Ptolemy he refuted,
But, later, acquiesced to the Pope.

Kepler (1571-1630)

Kepler was in a nice groove,
When he saw the planets move.
He caused great commotion
With his laws of their motion.
For Ptolemy they did disprove.

Descartes (1596-1650)

A dreamer and egotist was Descartes,
Who gave Cartesianism its start.
Expanding all knowledge from
His "Cogito ergo sum,"
He took all opposition to heart.

Fermat (1601-1665)

Probability's founder was Fermat.
Far from calculus he was not.
But he was socially unsmart
And ticked off Descartes,
'Though it was his advice he sought.

Pascal (1623-1662)

Pascal. Fermat's false friend.
Much time with vacuums he would spend.
His math machine we adore,
The triangle, press, and more.
He was lost to religion in the end.

Newton (1642-1727)

Newton was a prideful man,
Thinking calculus alone he began.
'Though his theories on light
Were not perfectly right,
Discovering gravitation was grand.

Leibnitz (1646-1716)

Towards Leibnitz was Newton quite spiteful.
Who was calculus' founder rightful?
Pick whomever you want.
Leibnitz influenced Kant,
And his theories of monads were insightful.