

Mathematics 3010, Summer 2009: Ch. 8 Problems

History

1. What other civilization may have influenced Indian mathematics the most?
2. What notable representative of the civilization from the first problem seems not to have been known to the Indians?
3. Why might some ancient mathematicians not have given derivations of their work?
4. What is $0/0$, according to Brahmagupta?
5. What was the approximation for π used in the Sulbasutras?
6. How was zero represented in Hindi texts?
7. Where were the earliest writings found that use a "decimal with zero" system?
8. Who introduced decimal fractions, completing the decimal system as we know it?

Mathematics – submit written solutions

- 1,5. Find the equation of a parabola approximating the first half-period of the sine curve.
- 2,6. Show that Brahmagupta's method of producing new solutions to Pell equations is valid.
- 3,7. Solve the Pell equation $83x^2 + 1 = y^2$
- 4,8. Using the description of squaring a circle from the Sulbasutras, compute the approximate value of π used.