

Math 32 Quiz

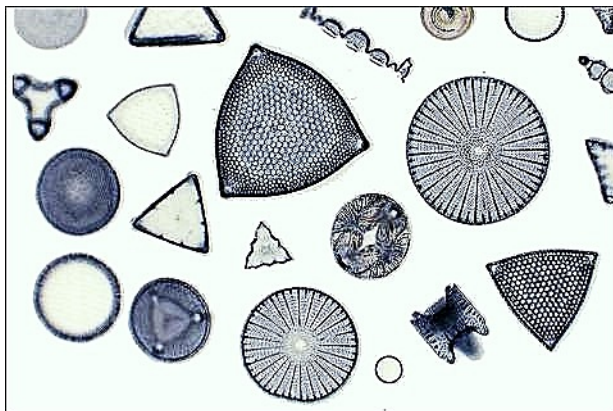
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<http://math.berkeley.edu/~theo/fj/08Fall32/>

Thursday, October 23, 2008

Name: _____ Score: _____ /10

You have twenty minutes to complete this quiz. You may not use calculators or notes, but the chalkboards are yours.

1. (3 pts) Suppose the population of a colony of diatoms increases exponentially. At the start of an experiment there are 6000 diatoms, and one day later there are 6500. How long (from the start of the experiment) will it take for the population to reach 10,000? Give your answer in terms of the base e “natural” logarithm. You do not need to simplify.



2. (3 pts) The half life of radioactive Carbon-14 (abbreviated ^{14}C) is 5730 years. A sample of pottery (made from plant-based mud) from Fell's Cave, in southern Chile, has a ^{14}C concentration of 150 billion atoms per mole. When the plants were alive (shortly before the pot was made), the concentration of ^{14}C was 600 billion atoms per mole. How old is the sample? Round your answer to the nearest thousand years. (Or partial credit for giving an unsimplified answer in terms of the natural logarithm.)
3. (2 pts) A sum of \$1000 is placed in a savings account at 4% interest compounded continuously. How much is in the account after one year? Give your answer in terms of e ; you do not need to simplify.
4. (2 pts) A sum of \$1000 is placed in a savings account at 4% interest compounded quarterly. How much is in the account after one year? (Full points for computing an exact answer; partial credit for giving an answer without simplifying.)