6. (*expires 2/17*) Define a `Maple` function g that, given a positive integer k yields the sum of the first k primes. What is k such that $g(k) \leq 100,000$ but $g(k+1) > 100,000$? You might find `sum` and `ithprime` helpful.

7. (*expires 2/21*) Use the Maclaurin series for $\arctan x$ (that is, the Taylor series about $x = 0$) evaluated at $x = 1/\sqrt{3}$ to compute the value of π to 30 places. How many terms are needed to compute the value to 50 places?

8. (*expires 2/17*) Fit the points $(-1.9, -4.7), (-0.8, 1.2), (0.1, 2.8), (1.4, -1.2), (1.8, -3.5)$ by means of a quadratic function $f(x) = ax^2 + bx + c$, using the least square method. First, do this step by step, as we did in class; then, use the built-in `Maple` command, described in the notes. Check that the two solutions agree.

   You can load these data points from the web at `http://www.math.sunysb.edu/~scott/mat331.spr12/problems/prob89.txt`, which defines a list `prob8` containing these points.

   See the page on loading a file from the web from the class web page for more details.

9. (*expires 2/17*) Fit the set of points

$$(1.02, -4.30), (1.00, -2.12), (0.99, 0.52), (1.03, 2.51), (1.00, 3.34), (1.02, 5.30)$$

   with a line, using the least square method we used in class. You will see that this is not a good fit. Think of a better way to find a line which *is* a good fit and use `Maple` to do it. Explain in your solution why you think your better way is indeed better.

   You can load these data points from the web at `http://www.math.sunysb.edu/~scott/mat331.spr12/problems/prob89.txt`, which defines a list `prob9` containing these points.

   See the page on loading a file from the web from the class web page for more details.

10. (*expires 2/15*) The file `http://www.math.sunysb.edu/~scott/mat331.spr12/problems/prob10.txt` defines 21 data points that approximates an exponential curve of the form $y = ae^{bx}$. This data is called `prob10`.

    Find a and b by taking the appropriate logarithm, then use `LeastSquares` to find the resulting "best" line. Transform this line appropriately to get an exponential curve.

    Plot the exponential and the `prob10` data on the same axes.

    (Since we will be doing exactly this process in class next time, the problem is due abnormally early.)