Experimental Mathematics
MAST90053 2014
Assignment 1

1. (11 marks) Program the PSLQ algorithm in Mathematica.

```
Clear[PSLQ];
PSLQ[x_]:=Block[
  (*Temporary variables here*)
  {gamma=2/Sqrt[3],n,A,B,...},

  n=Length[x];
  A=B=IdentityMatrix[n];

  (*code here*)
];
```

   Your code needs to be thoroughly commented. Explain clearly each part and state what it does. The syntax to include comments is `(* comment *)`.

2. (2 marks) Use your algorithm to identify the following number:

$$5.688356693811119614108893280005147437108843316563097033045 26$$

   Show the computation in your notebook.

3. (2 marks) PSLQ may also be used to find integer relations between functions by evaluating them at a fixed random point. Use your algorithm to express $\sin(11x)$ in terms of $\sin(x), \sin^2(x), \ldots, \sin^{11}(x)$.

   Show the computation in your notebook.

DUE DATE: Wednesday 26th March at 6pm. You must have submitted your completed assignment via LMS by this time.

IMPORTANT: You must submit a working program to be marked. If you cannot finish the assignment, you should clearly state up to where your code is working, and where it goes wrong. Your notebook file should be named `lastname_initial_assign1.nb`.