Programming and Numerical Analysis (A)

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Problem 11

Obtain the inverse matrix of

$$A = \begin{pmatrix} 1 & 3 & 3 & 2 \\ 2 & 1 & -8 & -1 \\ 1 & 1 & 6 & 4 \\ 1 & 6 & 5 & 2 \end{pmatrix}$$

```
Inverse of matrix a :
 -153.000015    20.000004    49.000008    65.000015
   31.000004    -4.000001   -10.000002   -13.000004
  -47.000008     6.000001    15.000003    20.000006
  101.000015   -13.000003   -32.000008   -43.000011
```

by use of Gauss-Jordan Elimination.

Problem 12

Interpolate the next data by the Lagrange formula

x	-1	-1/2	0	1/2	1
f(x)	0	-1	0	1	0

```
f(-2.000000)= 16.000000
f(2.000000)= -16.000000
```

and evaluate the values of $f(-2)$ and $f(2)$.

Used the code that was given.

```
unuu@unuu-Alienware-m15:~/Documents/PandNa/PandNa$ mv Makefile polint.mk
unuu@unuu-Alienware-m15:~/Documents/PandNa/PandNa$ mv Makefile.gauss gaussj.mk
unuu@unuu-Alienware-m15:~/Documents/PandNa/PandNa$ make -f polint.mk
cc -g -c polint.c
cc -g -c nrutil.c
cc -g -c polint_main.c
cc -g polint.o nrutil.o polint_main.o  -lm  -o polint
unuu@unuu-Alienware-m15:~/Documents/PandNa/PandNa$ make -f gaussj.mk
cc -O -c gaussj.c
cc -O -c gauss_driver.c
cc -O gaussj.o nrutil.o gauss_driver.o  -lm  -o gaussj
```