# PBS Matlab example

MATLAB (matrix laboratory) is a multi-paradigm numerical computing environment and fourth-generation programming language. A proprietary programming language developed by MathWorks, MATLAB allows matrix manipulations, plotting of functions and data, implementation of algorithms, creation of user interfaces, and interfacing with programs written in other languages. To run, Matlab program codes in a HPC environment, first load the relevant module:

`module load matlab`

Consider the following Matlab code:

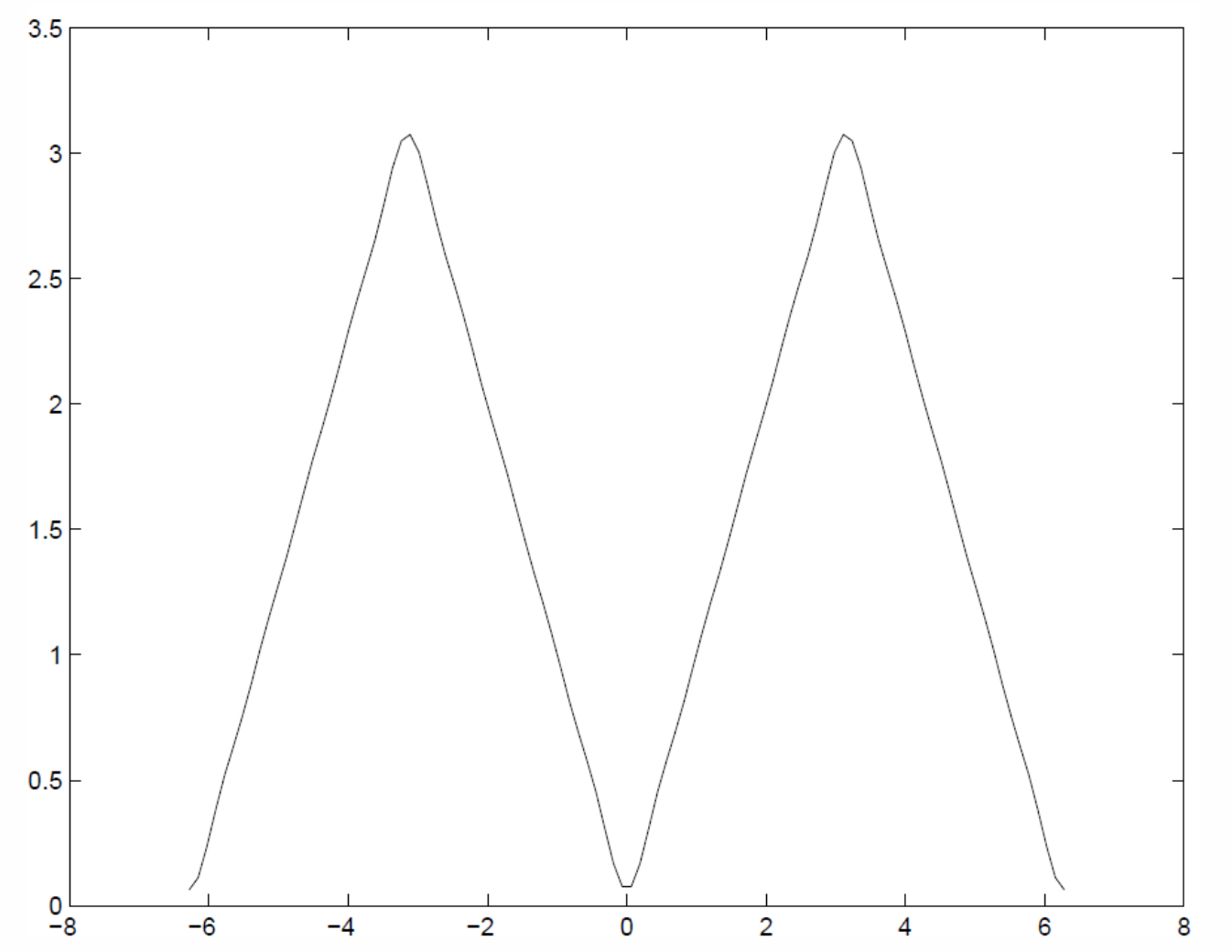
```
% MATLAB M-file example to approximate a sawtooth
% with a truncated Fourier expansion.
%
nterms=5;
fourbypi=4.0/pi;
np=100;
y(1:np)=pi/2.0;
x(1:np)=linspace(-2.0*pi,2*pi,np);
for k=1:nterms
   twokm=2*k-1;
   y=y-fourbypi*cos(twokm*x)/twokm^2;
end;
plot(x,y);
print -deps matlab_test_plot.ps;
quit;
```

Now let's write a pbs job submission script (`matlab.pbs`):

```
#!/bin/bash -l

#### job name
#PBS -N matlab_test
#
#### select resources
#PBS -l walltime=10:00:00
#PBS -l nodes=1:ppn=1
#
```

```
#### mail Options
#PBS -m abe
#PBS -M ruser@usq.edu.au

#
#### set journal options
#PBS -j oe
#
#### select queue
#PBS -q standard
#

#### load matlab module
module load matlab

#### cd to the directory where the job was submitted
cd $PBS_O_WORKDIR

# Run MATLAB
matlab -nodisplay -nodesktop -nosplash -r matlab_test
```

Now, if you run the job script as `qsub matlab.pbs`, you will see the following output:




Matlab code output