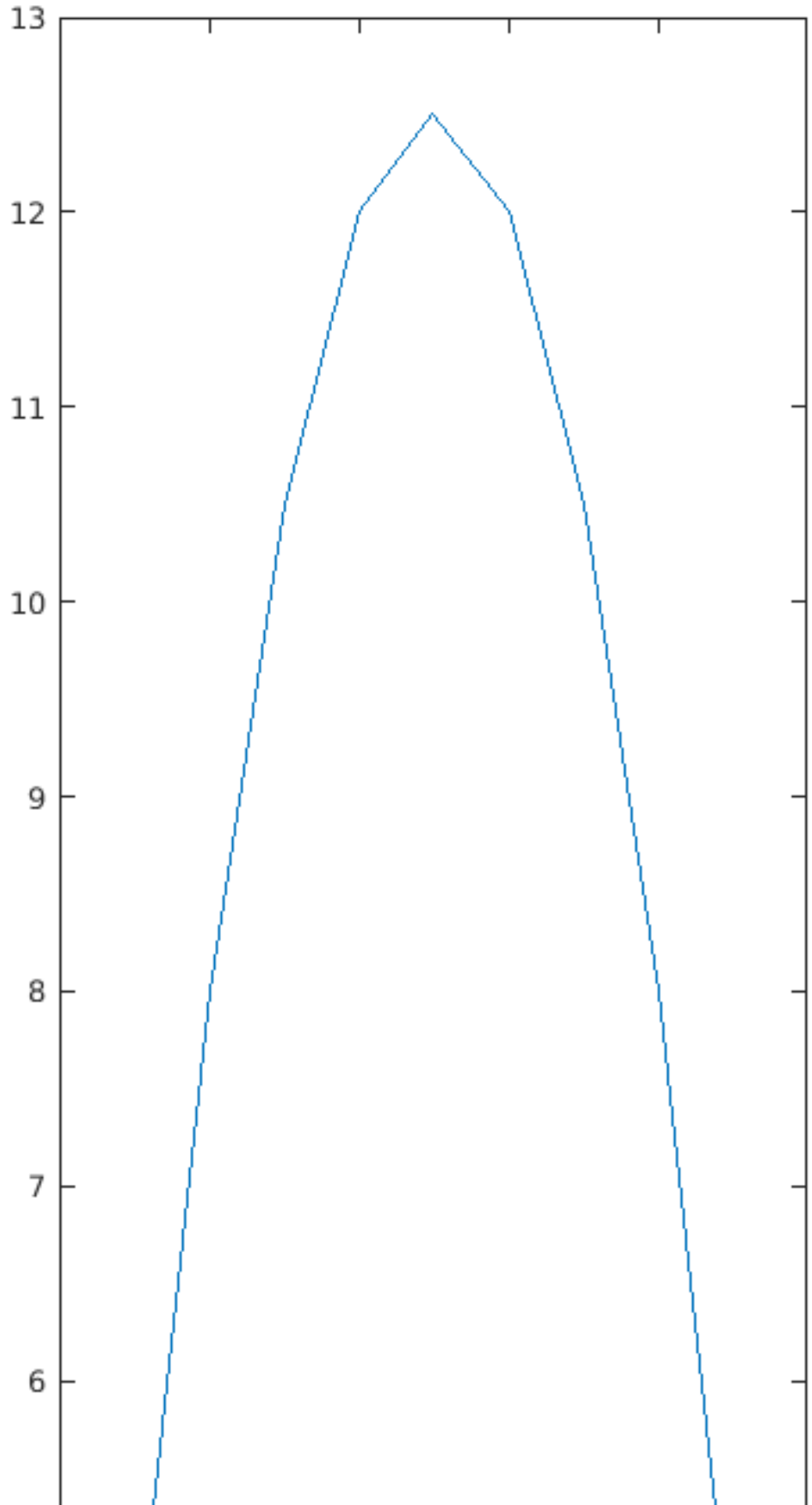
Table of Contents

Aufgabe 1

```
dbtype aufgabe01.m;

aufgabe01;
```

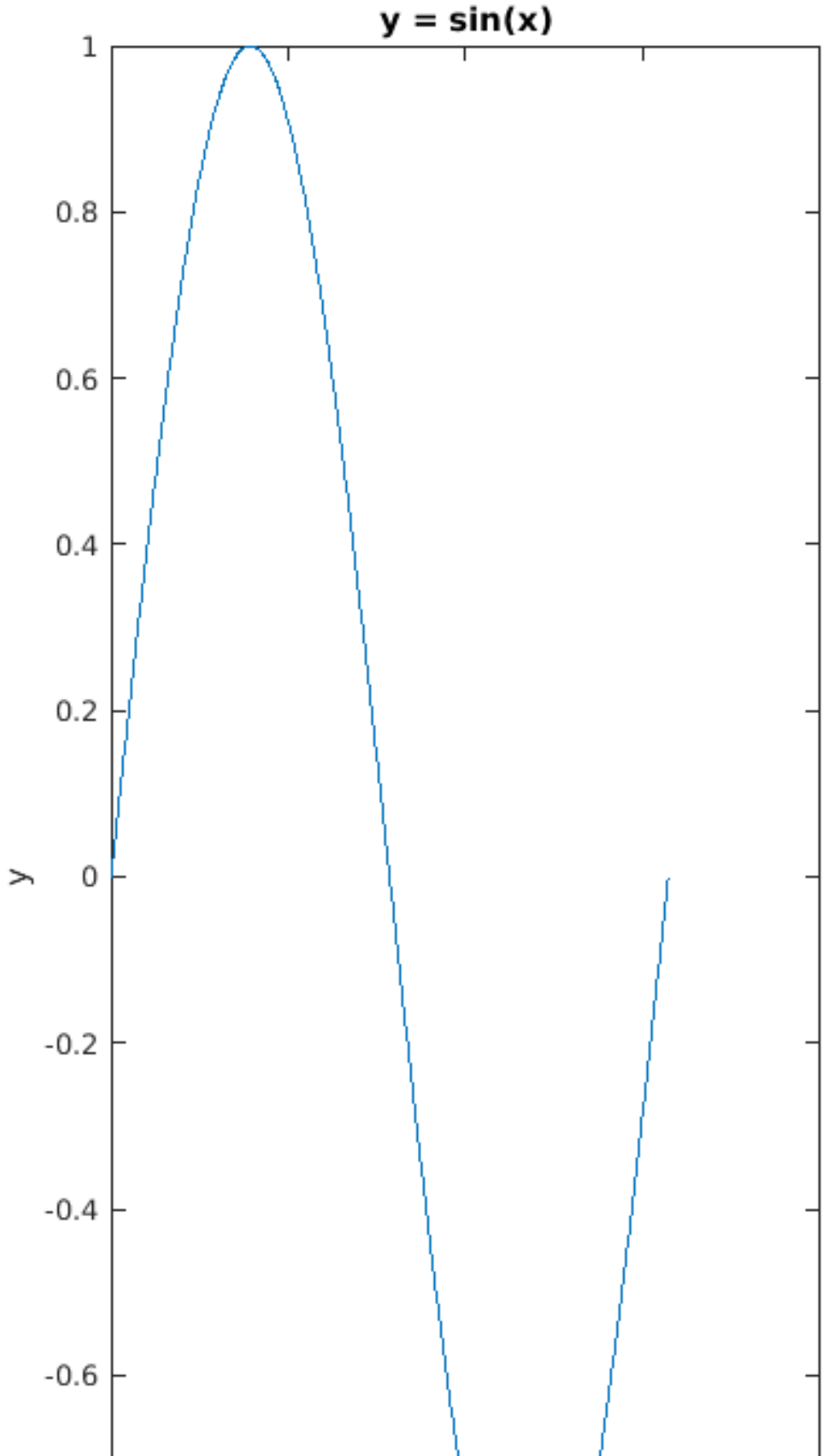
```
1     n = 9;
2     V = diag(ones(n-1,1),1);
3     A = 2*eye(n)-V-V';
4
5
6     B = diag(diag(linspace(1,n,n)'*linspace(1,n,n)));
7
8     b = ones(n,1);
9
10    disp(b);
11
12    disp(A+2*B);
13
14    disp(sum(sum(A)));
15
16    disp(inv(A));
17
18    y = inv(A)*b;
19
20    disp(y);
21
22    x = linspace(1,n,n);
23
24    plot(x,y);
25
26
     1
     1
     1
     1
     1
     1
     1
     1
     1

     4    -1     0     0     0     0     0     0     0
    -1    10    -1     0     0     0     0     0     0
```

```
    0    -1    20    -1     0     0     0     0     0
    0     0    -1    34    -1     0     0     0     0
    0     0     0    -1    52    -1     0     0     0
    0     0     0     0    -1    74    -1     0     0
    0     0     0     0     0    -1   100    -1     0
    0     0     0     0     0     0    -1   130    -1
    0     0     0     0     0     0     0    -1   164

    2

Columns 1 through 7

   0.9000    0.8000    0.7000    0.6000    0.5000    0.4000    0.3000
   0.8000    1.6000    1.4000    1.2000    1.0000    0.8000    0.6000
   0.7000    1.4000    2.1000    1.8000    1.5000    1.2000    0.9000
   0.6000    1.2000    1.8000    2.4000    2.0000    1.6000    1.2000
   0.5000    1.0000    1.5000    2.0000    2.5000    2.0000    1.5000
   0.4000    0.8000    1.2000    1.6000    2.0000    2.4000    1.8000
   0.3000    0.6000    0.9000    1.2000    1.5000    1.8000    2.1000
   0.2000    0.4000    0.6000    0.8000    1.0000    1.2000    1.4000
   0.1000    0.2000    0.3000    0.4000    0.5000    0.6000    0.7000

Columns 8 through 9

   0.2000    0.1000
   0.4000    0.2000
   0.6000    0.3000
   0.8000    0.4000
   1.0000    0.5000
   1.2000    0.6000
   1.4000    0.7000
   1.6000    0.8000
   0.8000    0.9000

   4.5000
   8.0000
  10.5000
  12.0000
  12.5000
  12.0000
  10.5000
   8.0000
   4.5000
```


13
12
11
10
9
8
7
6

Aufgabe 2

```
dbtype aufgabe02.m;

aufgabe02;


1     x = linspace(0,2*pi,1000);
2     y = sin(x);
3     plot(x,y); xlabel('x'); ylabel('y'); title('y = sin(x)');
```


y = sin(x)
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
y

Aufgabe 3

```
dbtype aufgabe03.m;

aufgabe03;
```

```
1     %copyfile(fullfile('/home/amock/matlab_workspace/
blatt01','somefunc.m'));
2
3     dbtype somefunc.m;
4
5     disp(somefunc(2,5));
6     disp(somefunc(pi,7));
7     disp(somefunc(sqrt(2),4));
8
```

```
1     function y = somefunc(x,n)
2     y = sum(x.^(1:n))
3     end
```

```
y =

    62

    62


y =

   4.4291e+03

   4.4291e+03


y =

   10.2426

   10.2426
```

Aufgabe 4

```
dbtype aufgabe04.m;

aufgabe04;
```

```
1     %copyfile(fullfile('/home/amock/matlab_workspace/
blatt01','findEpsilon.m'));
2     dbtype findEpsilon.m;
3     findEpsilon();
```

```
l = 0;
r = 1;
m = 0.5;

while(m~=l && m~=r)
 if (1+m) > 1
  r = m;
 else
  l = m;
 end
 m = (r+l)/2;
end

fprintf('\nepsilon=%e\n',r);
fprintf('\n(1+epsilon)-1=%e\n\n',(1+r)-1);
```

```
epsilon=1.110223e-16

(1+epsilon)-1=2.220446e-16
```

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