

# Assignment 0 Solutions

Aaron Cahn  
University of Wisconsin-Madison  
cahn@cs.wisc.edu

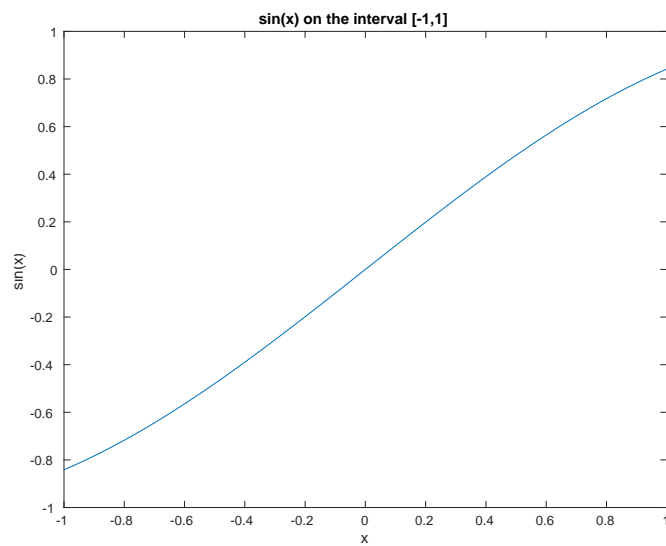
January 27, 2015

# 1 Solutions

## 1.1 Question 1

Listing 1: Matlab Commands

```
figure  
plot([-1:0.01:1], sin([-1:0.01:1]))  
title('sin(x) on the interval [-1,1]')  
xlabel('x')  
ylabel('sin(x)')  
print -dpdf a0_q1.pdf
```



## 1.2 Question 2

Listing 2: Matlab Commands

```
A = eye(20);  
A(1,1:19) = 1;  
A(20,1:20) = 1;  
A(1:20) = 1;  
B = zeros(20,1);  
B(1,1) = 17;  
A\B
```

$$x = \begin{pmatrix} -1.0000 \\ 1.0000 \\ 1.0000 \\ 1.0000 \\ 1.0000 \\ 1.0000 \\ 1.0000 \\ 1.0000 \\ 1.0000 \\ 1.0000 \\ 1.0000 \\ 1.0000 \\ 1.0000 \\ 1.0000 \\ 1.0000 \\ 1.0000 \\ 1.0000 \\ 1.0000 \\ 1.0000 \\ -17.0000 \end{pmatrix} \quad (1)$$

### 1.3 Question 3

Listing 3: ssolve functions

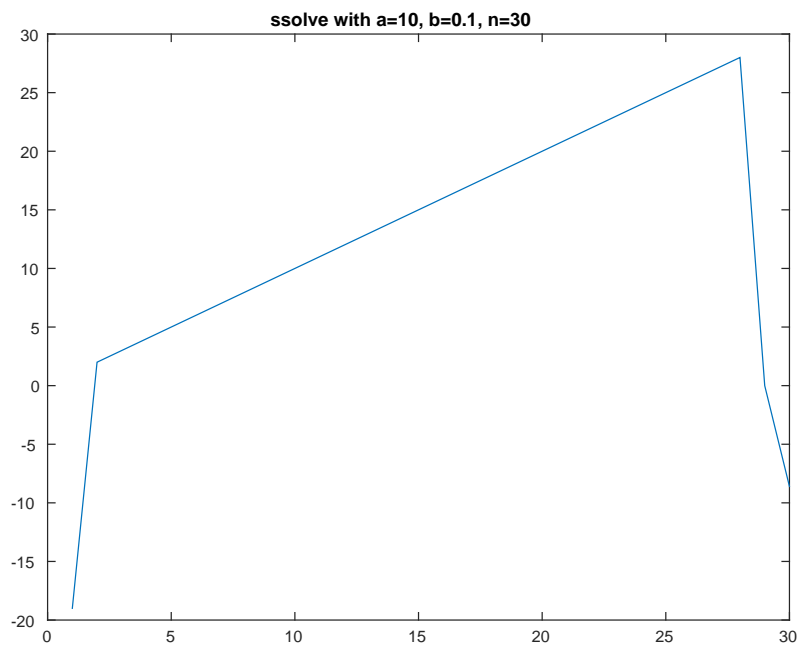
```
function x = ssolve(a, b, n)
A = eye(n);
A(1,2) = a;
A(n,1:n-1) = b;
B = (1:n)';
B(n-1,1) = 0;
x = A\B;
```

## 1.4 Question 4

Listing 4: Matlab Commands

```
ret = ssolve(10, 0.1, 30);  
figure  
plot(ret)  
title('ssolve with a=10, b=0.1, n=30')  
print -dpdf a0_q4_a.pdf  
  
clear all  
  
ret = ssolve(2, -0.05, 50);  
figure  
plot(ret)  
title('ssolve with a=2, b=-0.05, n=50')  
print -dpdf a0_q4_b.pdf
```

### 1.4.1 Part A



### 1.4.2 Part B

