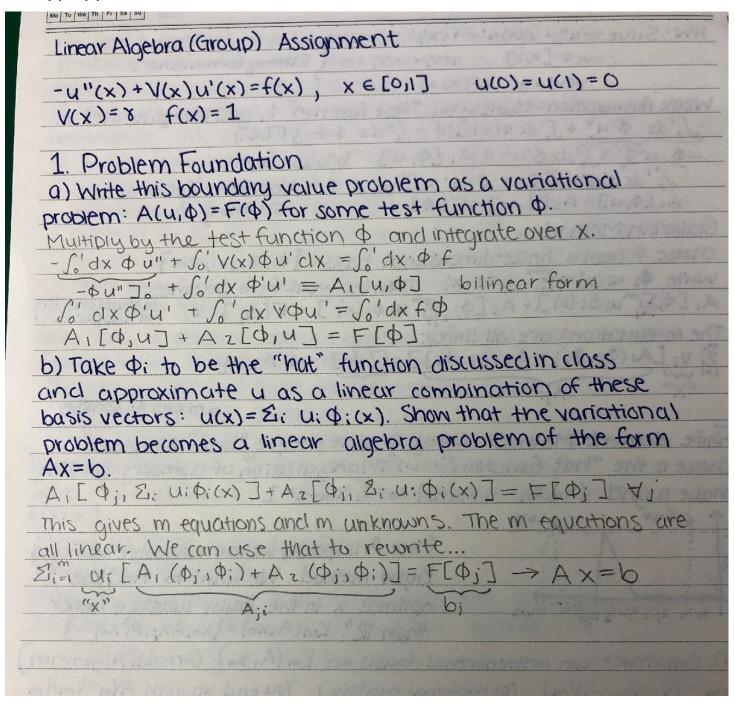
Linear Algebra Group Project - Bethany Wu & Alex Stapely

Problem 1: Problem Formulation

Parts (a) & (b)



Part (c)

[A,b] = BVPtoVar(5,1)

A = 5×5 0.3333 0.3333 0 0 0

```
-0.6667
              0.3333
                         0.3333
                                                    0
                         0.3333
             -0.6667
                                    0.3333
                                                    0
         0
                    0
                        -0.6667
                                    0.3333
                                               0.3333
                                   -0.6667
         0
                    0
                              0
                                               0.3333
b = 5 \times 1
     6
     6
     6
     6
```

```
function [A,b] = BVPtoVar(n,gamma)
    dx = n+1;
    % Forming A1
    side_A1 = ones(n-1,1)*(-1/(dx));
    diag_A1 = ones(n,1)*(2/dx);
    A1 = diag(side_A1,-1)+diag(diag_A1)+diag(side_A1,1);
    % Forming A2
    side_A2 = ones(n-1,1)*(gamma/2);
    A2 = diag(-side_A2,-1)+diag(side_A2,1);

A = A1+A2;
    b = ones(n,1)*dx;
end
```