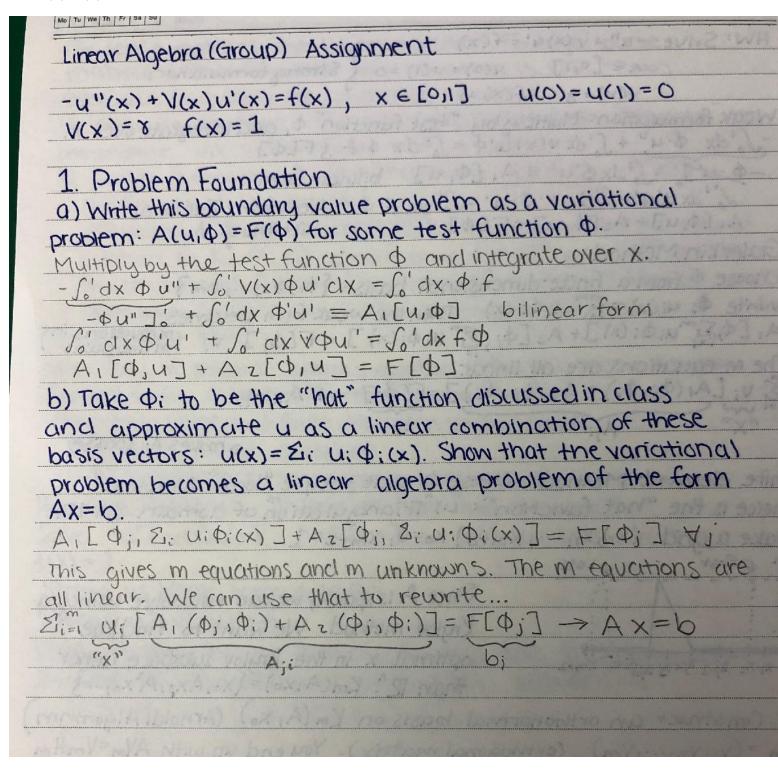
Linear Algebra Group Project - Bethany Wu & Alex Stapely

Problem 1: Problem Formulation

Parts (a) & (b)



Part (c)

[A1,b1] = BVPtoVar(5,1)

```
A1 = 5 \times 5
  0.3333 0.3333
                                 0
                                         0
                       0
          0.3333 0.3333
                                 0
                                         0
  -0.6667
          -0.6667 0.3333 0.3333
      0
                                         0
             0 -0.6667
                           0.3333
       0
                                     0.3333
                     0 -0.6667
       0
               0
                                     0.3333
b1 = 5 \times 1
    6
    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
```