Assignment 01: Rolling In the Mud

1. Create the following matrices:

$$\boldsymbol{u} = \begin{bmatrix} 11 & 13 & 17 \end{bmatrix} \tag{1}$$

$$\boldsymbol{v} = \begin{bmatrix} -1 \\ -1 \\ -1 \end{bmatrix} \tag{2}$$

$$\boldsymbol{A} = \begin{bmatrix} -\boldsymbol{u} \\ 2\boldsymbol{u} \\ 7\boldsymbol{u} \end{bmatrix} \tag{3}$$

$$\boldsymbol{B} = \begin{bmatrix} \boldsymbol{A}^{\mathrm{T}} & \boldsymbol{v} \end{bmatrix} \tag{4}$$

2. Perform the following calculations:

$$c = \mathrm{e}^{\mathrm{j}\pi/4} \tag{5}$$

$$d = \sqrt{\mathrm{j}} \tag{6}$$

$$l = \left\lfloor \sqrt[2.1]{8.4108 \times 10^6} \right\rfloor \tag{7}$$

$$k = \lfloor 100 \log(2) \rfloor + \lceil \mathrm{e}^{7.5858} \rceil \tag{8}$$

3. Of all the operators that we covered, matrix left division, `mldivide`, isn't commonly seen in other programming languages. What's sepcial about this operator is that it allows us to pragmatically solve systems of linear equations of the form $\boldsymbol{Ax} = \boldsymbol{b}$.

   Read the documentation for left matrix division and solve the system of linear equations given coefficient matrix

$$\boldsymbol{A} = \begin{bmatrix} 1 & -11 & -3 \\ 1 & 1 & 0 \\ 2 & 5 & 1 \end{bmatrix} \tag{9}$$

   and constants

$$\boldsymbol{b} = \begin{bmatrix} -37 \\ -1 \\ 10 \end{bmatrix}. \tag{10}$$