

# ASSIGNMENT 01: ROLLING IN THE MUD

1. Create the following matrices:

$$\mathbf{u} = [11 \quad 13 \quad 17] \quad (1)$$

$$\mathbf{v} = \begin{bmatrix} -1 \\ -1 \\ -1 \end{bmatrix} \quad (2)$$

$$\mathbf{A} = \begin{bmatrix} -\mathbf{u} \\ 2\mathbf{u} \\ 7\mathbf{u} \end{bmatrix} \quad (3)$$

$$\mathbf{B} = [\mathbf{A}^T \quad \mathbf{v}] \quad (4)$$

2. Perform the following calculations:

$$c = e^{j\pi/4} \quad (5)$$

$$d = \sqrt{j} \quad (6)$$

$$l = \lfloor \sqrt[2]{8.4108 \times 10^6} \rfloor \quad (7)$$

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

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

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

$$\mathbf{A} = \begin{bmatrix} 1 & -11 & -3 \\ 1 & 1 & 0 \\ 2 & 5 & 1 \end{bmatrix} \quad (9)$$

and constants

$$\mathbf{b} = \begin{bmatrix} -37 \\ -1 \\ 10 \end{bmatrix}. \quad (10)$$