Math 251-DX01
Test 1

SUBMISSION DEADLINE: 3:30pm Pacific Time
Submit on D2L

Number of Questions: 5
Total Marks: 20

Show all your work for full marks.
You MAY use the course website (notes, videos etc) and your own notes
You may NOT copy from others (classmates, tutors, Chegg etc)

Submit jpg or pdf files
Feel free to handwrite your solutions and take photos of your work

1. [4 marks] Sketch the triangle with vertices $A = (-6, 1), B = (4, 4)$ and $C = (3, 2)$. Calculate the smallest angle in the triangle.

2. [4 marks] Let c be a real number. Find the volume of the parallelepiped determined by $\mathbf{u} = [4, -8, 7], \mathbf{v} = [5, c, 3]$ and $\mathbf{w} = [1, -1, 6]$

3. [4 marks] Consider the line through $C = (4, 6, 8)$ with
direction vector $\mathbf{d} = [1, 2, -2]$. Find the distance between the line and point $P = (11, 13, -2)$.

4. [4 marks] Find the general form of the plane with parametric form:

$$\begin{aligned} x &= -1 + 2s + 3t \\ y &= 7 - 3s + 6t \\ z &= 8 + 8s + 8t \end{aligned}$$

5. [4 marks] a) Let c be a real number. Solve using Gauss-Jordan Elimination:

$$\begin{aligned} 2x - 6y + 8z &= 44 \\ -x + 4y + 2z &= 45 \\ 3x + 3y + 85z &= 872 + c \end{aligned}$$

b) Suppose the solution has $y = -56$. Find the value of x.