

Math 251-DX02
Test 1

SUBMISSION DEADLINE: 4:30pm 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 parallelogram with vertices $A = (-7, 2)$, $B = (3, 3)$, $C = (5, 2)$ and $D = (-5, 1)$. Recall that opposite angles are equal in a parallelogram. Calculate one of the two smallest angles in the parallelogram.

2. [4 marks] Let c be a real number. For which value(s) of c do the following vectors lie in a common plane?

$$\mathbf{u} = [2, -6, 3], \mathbf{v} = [4, 5, -1] \text{ and } \mathbf{w} = [c, 3, 4]$$

3. [4 marks] Find the point on the plane $x - 2y + z = 5$ that is closest to point $P = (3, 2, -4)$

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

$$\begin{aligned}x &= 4 + 4s + 4t \\y &= -3 - 7s + 9t \\z &= 6 + 3s + 2t\end{aligned}$$

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

$$\begin{aligned}3x - 9y + 12z &= 15 \\-x + 4y + 2z &= c \\3x + 3y + 85z &= -19\end{aligned}$$