

Math 251 X02
Test One

Time: 50 minutes
Total: 19 marks

Name: _____

1. [2 marks] Let $[4, 5] = c_1[1, 2] + c_2[-1, 1]$.
Find the coefficients c_1 and c_2 by graphing. Show all your work.

2. [5 marks] Let $\mathbf{u} = [9, 2]$ and $\mathbf{v} = [-4, 7]$ Find:

a) the angle between \mathbf{u} and \mathbf{v}

b) the projection of \mathbf{v} onto \mathbf{u}

3. [4 marks] Find the distance between the plane $2x - 5y + z = 13$ and the point $B = (2, -1, 6)$

4. [4 marks] Find the general form of the plane through points $A = (3, -6, 7)$, $B = (3, 0, 9)$ and $C = (-5, 1, 1)$

5. [4 marks] Solve using Gauss-Jordan Elimination:

$$\begin{aligned}2x - 8y - 68z &= -70 \\2x - 7y - 61z &= -57 \\-6x + 27y + 225z &= 249\end{aligned}$$