

Math 251 X01
Test One

Time: 50 minutes
Total: 19 marks

Name: _____

1. [2 marks] Let $[7, 3] = c_1[4, 2] + c_2[1, 1]$.
Find the coefficients c_1 and c_2 by graphing. Show all your work.

2. [5 marks] Let $\mathbf{u} = [7, 8]$ and $\mathbf{v} = [-6, 3]$ 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 $3x - 5y + z = 17$ and the point $B = (1, -6, 2)$

4. [4 marks] Find the general form of the plane through points $A = (1, -2, 4)$, $B = (3, 0, 9)$ and $C = (-5, 1, 1)$

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

$$\begin{aligned}2x - 8y - 68z &= -58 \\2x - 7y - 61z &= -46 \\-6x + 27y + 225z &= 210\end{aligned}$$