Proble

a)(3 marks

$$\left[\begin{array}{ccc|ccc} 5 & 3 & 0 & 1 & 0 & \\ 3 & 2 & 1 & 0 & 1 & \\ 0 & 0 & 1 & 0 & 0 & \end{array}\right]$$

$$\xrightarrow{\frac{1}{5}R_1} \left[\begin{array}{ccc} 1 & \frac{3}{5} & \\ 0 & 1 & \\ 0 & 0 & \end{array}\right]$$

$$\xrightarrow{R_2 - 5R_3} \left[\begin{array}{ccc} 1 & & \\ 0 & 1 & \\ 0 & & \end{array}\right]$$

b)(3 ma

Using The

$$E_6 E_5 E_4$$

$$\rightarrow A = E_1$$

$$= \left[\begin{array}{ccc} 5 & & \\ 0 & & \\ 0 & 0 & \end{array}\right]$$

Problem 3.(5 p

where $C = \begin{pmatrix} 7 & -1 \\ 6 & -1 \end{pmatrix}$

$(3A^T - I$

$= \begin{bmatrix} 7 & -1 \\ 6 & -1 \end{bmatrix}$

$\rightarrow 3A^T =$

$\rightarrow A^T =$

$\rightarrow \boxed{A = [}$

Pro
integer

(I-

Prob
invertible

IF AB

→ BA

$|A| = 1$

$|A_1| =$

$|A_2|$

de

αc

α_{ct}

Problem 9.(

a)(5 marks) Find
$2x - 3y + z = 1.$

LAT : 2(

→ 2

→ 1

$Q = (1 + \frac{4}{7}$

b)(5 marks) Fi

$L_1 : \begin{pmatrix} x \\ y \\ z \end{pmatrix}$

$n = (1,1,1) \times$

$= (-2,1,1)$

$\vec{PQ} = (0,0,1$

$d = \| \text{Proj}_n P$

P

Find
equat

Problem 1

in $\mathbb{R}^4$ evaluate t

a) $\text{proj}_{\mathbf{u}}(\mathbf{v} +$

Proj$_u$(v+u

b) $\|\mathbf{u}\|^2 + \|\mathbf{v}$

= (1+

= 6

c) $\mathbf{u} \times \mathbf{v} - \mathbf{u} \cdot \mathbf{w}$

VECTOR

d) the angle θ betwee

$\theta = \arccos\left($

$= \arccos$

Problem

as its edges. I

$8 = \text{Volume} = |$

$= a^2$

$\rightarrow a^2 + a - 4$

$\rightarrow$

Problem
$\text{Span}\{\mathbf{u}, \mathbf{v}, \mathbf{w}\}$

$\supseteq$: $U, U+V$

$\subseteq$: $V = aU +$

$W = aU$

Prob

2×2.

a)(5 n

form a

$a A_1 +$

$\rightarrow \begin{cases} 2 \\ 2 \\ a \end{cases}$

$\begin{vmatrix} 2 \\ 0 \\ \end{vmatrix}$

b)(2 m

a).

$\begin{cases} 2a + b \\ 2c = \\ a + 2b \end{cases}$

$S = \{ A_1, A_2 +$

Prob

Find the

S BASIS

$= K \begin{vmatrix} 1 & 1 \\ 1 & K \end{vmatrix}$

$= K^2 - 3$

Prob
and the s

Find the

AXIOM 1

AXIOM