BSSEZ3058

Date:	Augament #5 Day.
	Assignment #5 Day.
<u>Q</u> 1	$\vec{a} = \begin{pmatrix} 3 \\ 4 \end{pmatrix} \vec{b} = \begin{pmatrix} 1 \\ 2 \end{pmatrix} $
-	mojab 2 ab à
	$\frac{2 \left[3 \ 4\right] \left[\frac{1}{2}\right] \left[3\right]}{\left[3 \ 4\right] \left[\frac{3}{4}\right]} $
	= 3+8 (3) 9+16 (4)
	25 [4]
	$ \begin{array}{c c} 33/55 \\ \hline 44/55 \end{array} $ $ \begin{array}{c c} 33\\ \hline 55\\ \hline 44\\ \hline 55 \end{array} $
Q2	A ₂ (10)
	$P_{z} A (A^{T}A)^{-1}A^{T}$
	$\begin{array}{c c} A^{T}A_{L} & 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 1 & 1 & 2 \end{array}$
	$(A^{T}A)^{-1} = 1$ $\begin{bmatrix} 2 & -1 \\ -1 & 2 \end{bmatrix}$
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	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
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	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	
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	$ \frac{2-2+6}{1+4+4} \begin{pmatrix} 1 \\ 2 \\ 2 \end{pmatrix} $ $ \frac{6}{9} \begin{pmatrix} 1 \\ 2 \\ 2 \end{pmatrix} $	
	$\begin{array}{c c} z & 2 & 1 \\ \hline 3 & 2 & 2 \\ \hline \end{array}$	
	(4/3) (4/3) (4/3)	
	b ez b-p e $x - moj_w \vec{x}$ $ \begin{pmatrix} 2 \\ -1 \\ 3 \end{pmatrix} - \begin{pmatrix} 2/3 \\ 4/3 \\ 4/3 \end{pmatrix} $ $ \begin{pmatrix} 1 \\ 3 \\ 4/3 \\ 4/3 \end{pmatrix} $	

C 1/2 7/3 5/7 1/2 7/3 + (-7/3)^2 + (5/3)^2 1/2 1/2 + 25 1/2 1/2 + 25 1/2 1/2 1/2 1/2 1/3 1/4 1/4 1/4	Date:	Day:
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Jan 2 10 2 11 on 1 fed 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		$ e _2 \int (4/3)^2 + (-7/3)^2 + (5/3)^2$
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Qu a. c. [4] d2 [1] cm 1. Avois d = dc d { 2 [1] [4] [1] [1] [
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trois de	04	a. c. [47 dz [1] m 1
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b. When we project a vector onto a line in an extraorphial way it means we are dropping the winter straight down onto a line at a 90° angle. Imagin This is the shortest distance from the vector to me line. For enempte in first part vector C drops onto me line L at the point P = 1 7/2 7. This point represents the part of that lines up with the direction of L. An + 3y = 5 4n + y = 6		proj de 2 de il
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b. When we project a vector onto a line in an orthogonal way it necess we are dropping the wicker straight donor onto a line at a 90° angle. Imagisthis is the shortest distance from the vector to the line. For enempte in first point vector a drops and the line L at the point P = 17/27. This point represents the part of 2 that lines up with the direction of L. An + 3y = 5 4n + y = 6		7 (17 2 (7/2)
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c dreps onto the line L at the point P = [?/2]. This point represents the part of & that lines up with the direction of L. Of L. In + 3y = 5 Yn + y = 6		
point represents the part of 2 that lines up with the direction of L. Of L. An + 3y = 5 4n + y = 6	-	from the vector to the line. For enemple in first point vector
92. 92. 2n+3y=5 4n+y=6		c diens and me done L at me point + 2 1/2/. (Lis
9x + 3y - 5 4x + y - 6		
4n+y=6	Q5	
J		
	•	J

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7	$a. A_2 \begin{vmatrix} x & 3 \\ 4 & 1 \end{vmatrix}$ $x_2 \begin{vmatrix} y & b_2 \end{vmatrix} $	· ineq
1	$A \varkappa \approx b$	
	$\begin{bmatrix} 2 & 3 \\ \end{bmatrix} \begin{bmatrix} 2 & 7 \\ \end{bmatrix} \begin{bmatrix} 5 \\ \end{bmatrix}$	
1	$\begin{vmatrix} 4 & 1 & 1 & 1 \\ 1 & 1 & 1 & 2 & 2 \end{vmatrix}$	_
4-	$\lfloor 1-1 \rfloor$ $\lfloor 2 \rfloor$.	-
7-	h Mulbing AT an both sides to salve this. under	-
1	b. Multipuy AT on both sides to solve this. undermined problem.	
	An≈b	
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1	$\begin{bmatrix} 21 & 9 & \lceil \chi \rceil, \lceil 36 \rceil \end{bmatrix}$	
	[9 11] [4] [19]	
	c. $\begin{bmatrix} 21 & 9 & 36 \\ 9 & 11 & 19 \end{bmatrix}$ $R2 \leftarrow \begin{pmatrix} -3 \\ 4 \end{pmatrix} R1 + R2$	_
	[9 11 19] [al 9 367]	
	0 = 35	
	50 y 2 25 21x +9 y 2 36	
		_
	$\frac{y_2}{50} = \frac{21}{21} + 9(\frac{1}{2}) = 36$	_
	y 2 1/2 N 2 63	-
	N = [3/2] 7 2 3/2	_
	(Y ₂)	
Qb	q. (1,2) (2,3) (3,5)	
	η, mπ+c.	_
	2, 1n+c 3=2m+c 5,3m+c	

Date:	Day
	$ \begin{array}{c ccccc} M + (22 & A_2 & 1 & m_2 & m & b_2 & 2 \\ 2m + (23 & 21 & c & 3 \end{array} $
	3m + C = 3 31 , 3
	An=b
	$\begin{bmatrix} 1 & 1 & m \\ 2 & 1 & c \end{bmatrix} \begin{bmatrix} m & 2 & 2 \\ 3 & 3 & 3 \end{bmatrix}$
	m>n (Nosolution)
	b. $A^{T}Ax = A^{T}b$ $ \begin{bmatrix} 1 & 2 & 3 \\ 1 & 1 & 1 \end{bmatrix} \begin{bmatrix} 1 & 1 \\ 2 & 1 \end{bmatrix} \begin{bmatrix} m \\ C \end{bmatrix} = \begin{bmatrix} 1 & 2 & 3 \\ 1 & 1 & 1 \end{bmatrix} \begin{bmatrix} 3 & 1 \end{bmatrix} \begin{bmatrix} 5 \end{bmatrix} $ $ \begin{bmatrix} 14 & 67 & 6m \\ 237 \end{bmatrix} \begin{cases} 237 \end{cases} \begin{cases} 232 + 23 + 24 + 24 + 24 + 24 + 24 + 24 +$
	$ \begin{pmatrix} 14 & 6.7 & fm \\ 6 & 3 \end{pmatrix} \begin{pmatrix} c & 23 \\ c & 20 \end{pmatrix} $ $ \begin{pmatrix} 23 & 24 & 24 & 24 & 24 \\ 7 & 7 & 7 & 7 \end{pmatrix} $
	c $14m + 6c = 23$. $146 (23)$
	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
	$\frac{3}{7} \text{ yc} = \frac{1}{7} \frac{14m + 6c_{2}23}{14m + 6\left(\frac{1}{3}\right) = 23}$ $\frac{3c_{21}}{3} \frac{14m + 2 = 23}{3}$
	m = 23-2
	$\frac{y_2 3 y_1 + 1}{2}$ $m_2 3$
<u>_</u>	a. \vec{u}_{i} : $\begin{bmatrix} 1 \\ 0 \end{bmatrix}$ \vec{u}_{i} : $\begin{bmatrix} 1 \\ 0 \end{bmatrix}$ $\begin{bmatrix} $
	Make Orthogonal rectors. A & B.
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The state of the state of the state of	[9] utu

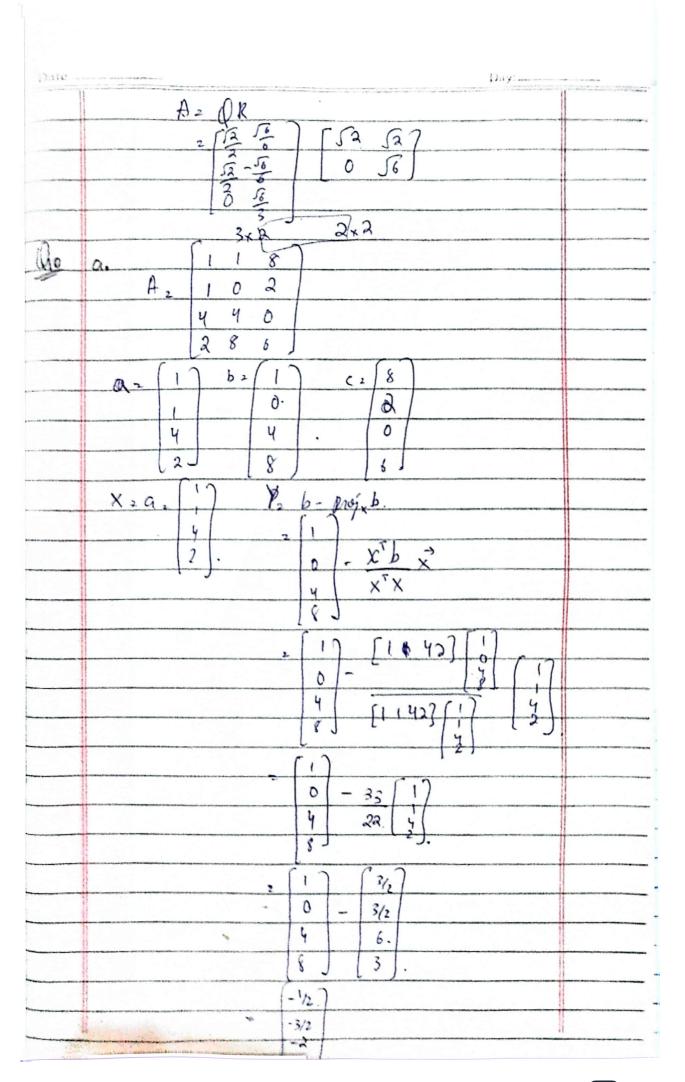
	= [] - [110] [] []	
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	[5]	
	$ = \begin{bmatrix} 1 \\ 1 \end{bmatrix} = \begin{bmatrix} 1 \\ 1 \end{bmatrix} $	
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	Mahe it into othorounal basis. 9,16 9/2 9,12 B	
	913 THE STATE OF T	
-	z [1] , [½]	
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	1 1/2 (-16)	
	$\frac{1}{2} \times \frac{\sqrt{6}}{\sqrt{3}} + \frac{1}{\sqrt{2}} \times \frac{-\sqrt{6}}{\sqrt{6}} + 0 \times \frac{\sqrt{6}}{\sqrt{3}}$	
	2 52 6 52 6 3.	
	$\frac{256 - 56 + 0}{12} = 0.44$	n o

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Normalized. quill = \(\(\frac{1}{12} \)^2 + \((\frac{1}{12} \)^2 + \((0)^2 \)	
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Kgyll and. Kgyll one hence normalized.	
normalized	
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A22 2	
$B_2 \overrightarrow{V}_2 - moj_{v_1} \overrightarrow{V}^2$	
$= \left(\begin{array}{c} 1 \\ -\frac{V_1^T V_2}{V_1^T V_1} \end{array} \right)$	
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
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Andrew Control	
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	$= \begin{bmatrix} 1 \\ 0 \end{bmatrix} = \begin{bmatrix} 0 \\ 1 \end{bmatrix} = \begin{bmatrix} (\frac{1}{2})^2 + (\frac{1}{2})^2 \end{bmatrix}$
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	b. The lyan-Schmidt process takes a set of rectors &
	makes than orthogonal by removing overlyping ports
	The projections with previous vectors. This keeps each
	hen vecher perpendicular to the ophers. Afterward, each.
	vector is scaled to have a length of I neiling ham
	orthonormal. The process doesn't change the space they
	cover, so he new set spans he same subgrace as I
	the original vectors. This gives can orthonormal basis
0.	for he subspice.
	P. 1 0
	$\begin{bmatrix} 0 & 2 \\ 0 & 4 \end{bmatrix}$
	\vec{a} \vec{a} \vec{a} \vec{a} \vec{a} \vec{a}
	a. $\vec{u}_{12} \begin{bmatrix} 1 \\ 1 \end{bmatrix}$ $\vec{u}_{22} \begin{bmatrix} 2 \\ 0 \end{bmatrix}$
	$\begin{bmatrix} 0 \end{bmatrix}$ $\begin{bmatrix} 2 \end{bmatrix}$.
	1
	Az 4,2 17 Bz v2 - moja v2
/	1 2 U2 - ATUZ Ã
à	$A^{\dagger}A$
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	2) (1107(17)
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	0 (1142)(1) (y). (1/3/2)	S (-1/2) -2/3 -1/2 S)
	6)	(-3/2)
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6] [2] [5]	
8		
= 3	$\begin{vmatrix} 1 \\ - \end{vmatrix} \begin{vmatrix} 1 \\ 1 \end{vmatrix} - \frac{46}{63} \begin{vmatrix} -\frac{1}{2} \\ -\frac{3}{2} \end{vmatrix}$	
0	7 -2	
[6	$\frac{1}{2} \left(\frac{2}{2} \right) \cdot \left[\frac{2}{2} \right] \cdot \left[\frac$	
2 2	$ \begin{array}{c cccc} & 1 & -23 & & & & & & & & & & & & \\ & & & & & & $	
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	12,42,22	-160 63 12/3
7.	$ \frac{\sqrt{(-\frac{1}{2})^2 + (-\frac{3}{2})^2 + (-2)^2 + (5)^2}}{\sqrt{(-\frac{1}{2})^2 + (-\frac{3}{2})^2 + (-2)^2 + (5)^2}} $	257189
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