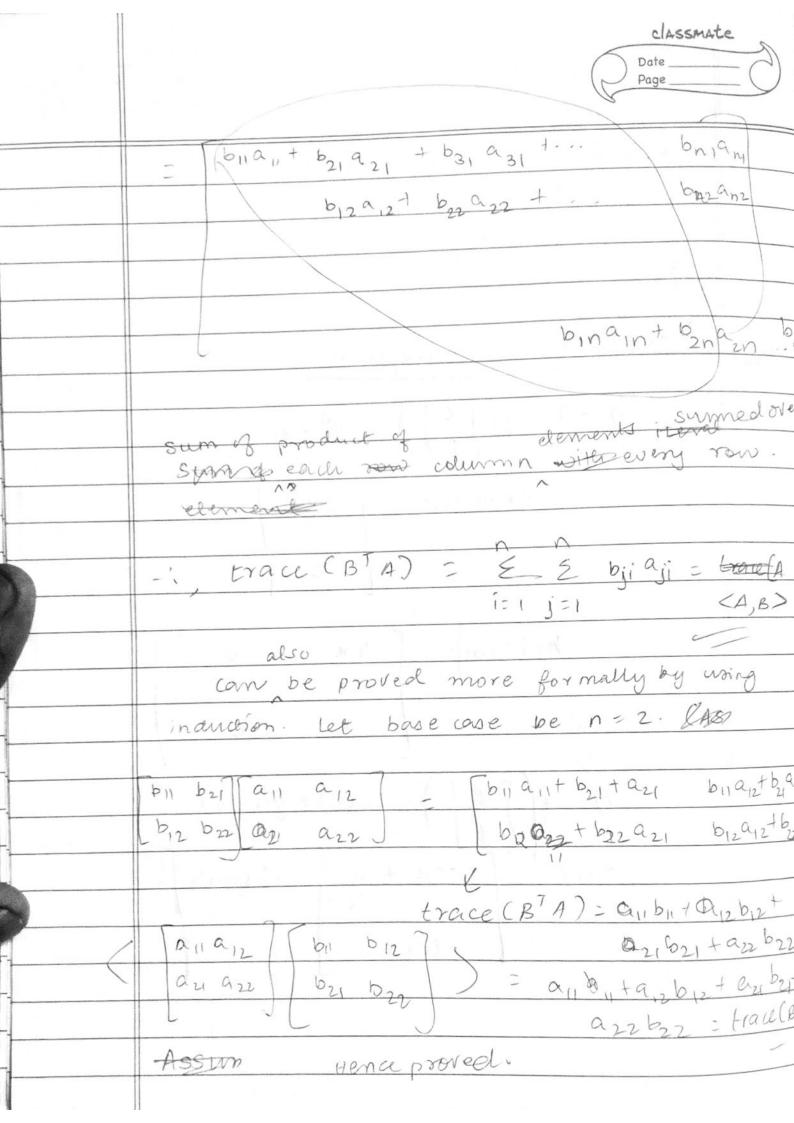
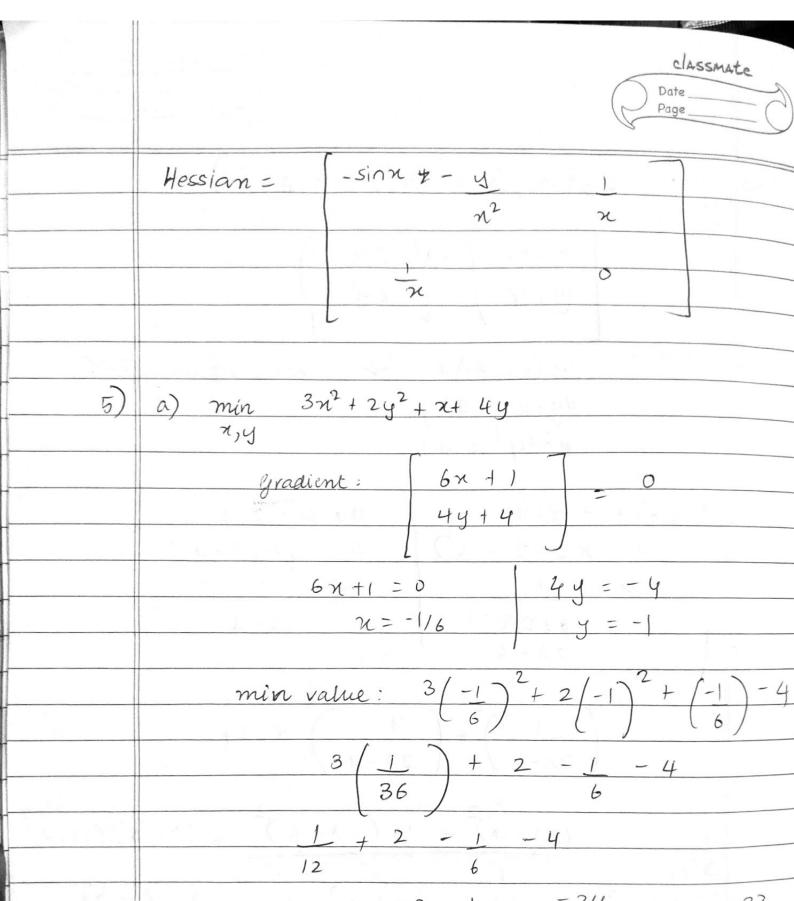
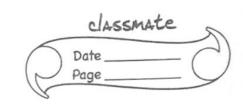
classmate

	Assignment 1:
	rissignment I
	Linear Algebra:
-5-17) (AB) = a11 a12 a13 . a17
	21
	a 22
	a _{2n} a _{nn}
	(b) b, b, b, b,
	· b21
	b22 -
	ben bon
	$= \int_{0}^{\infty} a_{11}b_{11} + a_{12}b_{12} + a_{13}b_{13} - \dots$
	= \(\frac{1}{2} \) \(\f
	j=1 j=1 j=1 j=1 j=1 j=1
	$B^{T}A = \begin{cases} b_{1}B & b_{1}2 & b_{1}3 & b_{1}n \end{cases} \begin{cases} a_{11} & a_{12} & a_{1n} \\ b_{21} & b_{21} \end{cases}$
	b ₂₁ ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '
	bons bons and
-	= [by b2, b3, bn] [anan an]
	b ₁₂ b ₂₂
	$+\alpha$
	bin bin mi and



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	Assume true until n=k
	Check for n= R+1
	solve
	3) Calculus & optimization.
	$(x) = x^3 + 2y$
•	gradient = \(2x^2 \)
	2
	hessian = Px 0
	0 6
	b) $f\left(\begin{bmatrix} x \\ y \end{bmatrix}\right)$ - $Sin(x) + glog(x)$
	gradient = [wsn + y Wessign 6]
	log n
	t





			,		~
b)	V K(2	4) -	XX	0/2/	, ,,)
1	0)]	\\\\	9(2)6	79)
11				0	

 $6x+1=2\lambda x \Rightarrow xunte vz xy(2x-6)$ $4y+4=2\lambda y$ $x^2+y^2=01$

$$6x+1=2\lambda x$$
 $4y+4=2\lambda y$
 $1=x(\lambda 2-6)$ $4=y(2\lambda-4)$
 $x=1$ $y=4$

21-6

$$\left(\begin{array}{c} 1 \\ 2\lambda - 6 \end{array}\right)^{2} + \left(\begin{array}{c} 4 \\ 2\lambda - 4 \end{array}\right)^{2} + \left(\begin{array}{c} 2 \\ 2\lambda - 4 \end{array}\right)^{2}$$

$$\frac{36}{216} \qquad \frac{(2\lambda - 4)^2 + 16(2\lambda - 6)^2}{(2\lambda - 6)^2} = (2\lambda - 6)^2(2\lambda - 4)^2$$

36 4 1 + 16 - 4 16 A + 16 (4 12 + 36 - 24 X) = 60 - 80

 $= (4\lambda^{2} + 16 - 16\lambda)(4\lambda^{2} + 36 - 24\lambda)$ $= (4\lambda^{2} + 16 - 16\lambda)(4\lambda^{2} + 36 - 24\lambda)$ $= (4\lambda^{2} + 16 - 16\lambda)(4\lambda^{2} + 36 - 24\lambda)$ $= (4\lambda^{2} + 16 - 16\lambda)(4\lambda^{2} + 36 - 24\lambda)$

 $\frac{16}{16}$ + $\frac{194}{1}$ - $\frac{194}{1}$ - $\frac{194}{1}$ - $\frac{194}{1}$

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On input to online multivariable simultaneous eq. solver.

4 = 0.909

X 2 = 4.2

is one of the solns. oftens are

$$n = 1.8i - 0.625$$
 $y = 0.55i + 2.83$
 $y = 2.91 - 0.247i$
 $\lambda = 0.247i + 2.91$

$$x = 9.41 - 0.165$$
 $y = 0.90 - 0.98$
 $3 = 4.2 - 0.027$

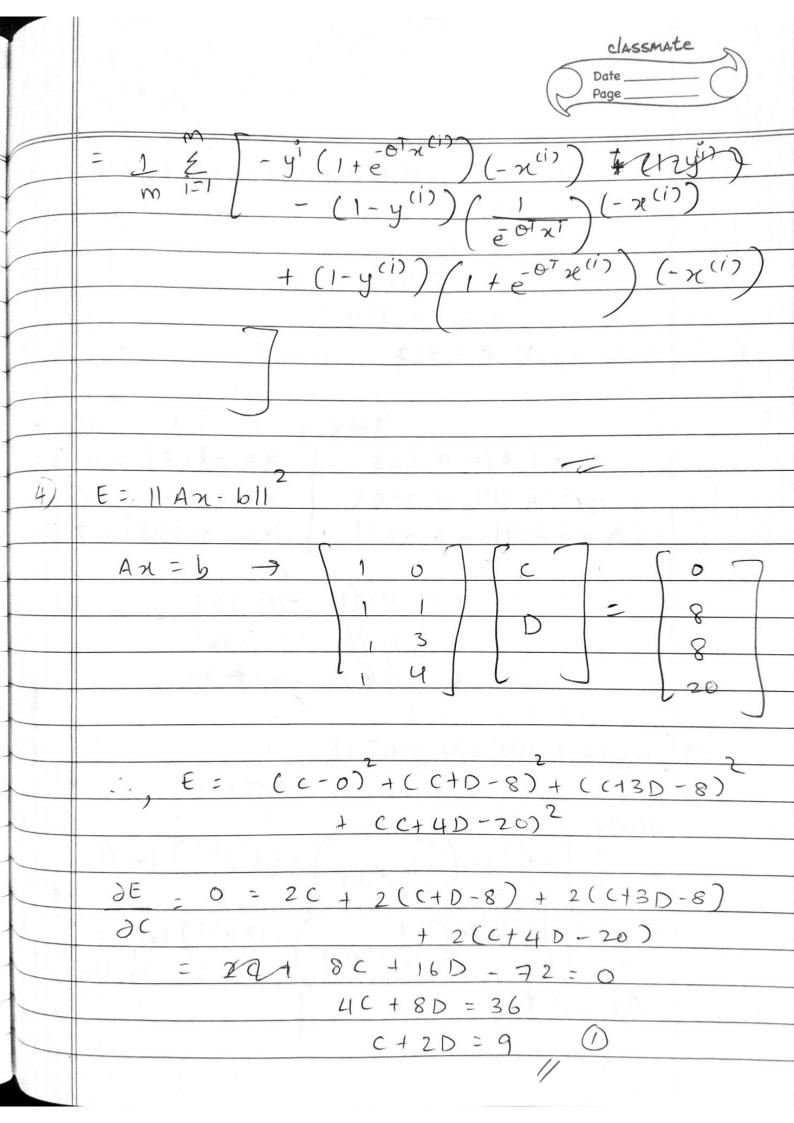
a) ho (x)= g(oTx)= g(oTx)= 1

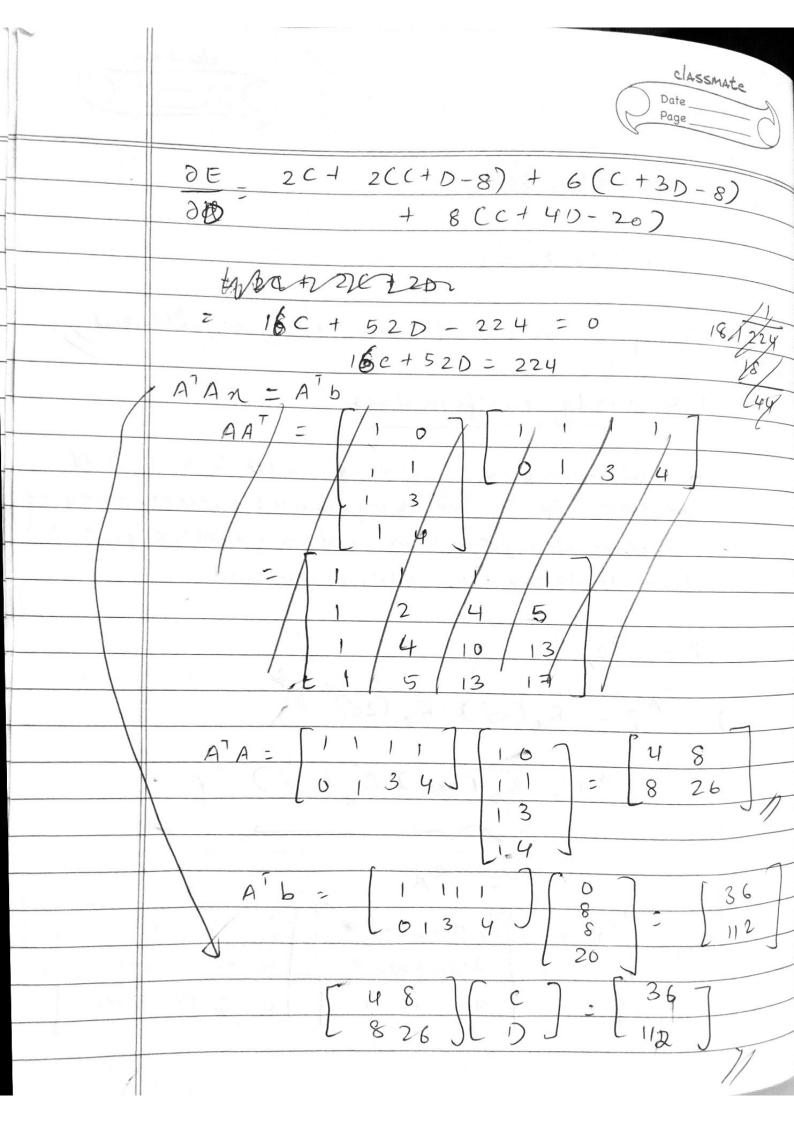
14 exp(-07 x)

$$\frac{1}{m} \sum_{i=1}^{m} \left[-y^{(i)} log \left(\frac{1}{1 + e^{Q^{T} \times U}} \right) - \left(1 - y^{(i)} \right) log \left(1 - y^{(i)} \right) \right]$$

$$\frac{1}{m} \sum_{i=1}^{\infty} \left[-y^{(i)} log \left(\frac{1}{1 + e^{0T} x^{(i)}} \right) - \left(\frac{1 - y^{(i)}}{1 - y^{(i)}} \right) log \left(\frac{1}{1 + e^{0T} x^{(i)}} \right) \right] \\
= \frac{1}{m} \sum_{i=1}^{\infty} \left[-y^{(i)} log \left(\frac{1}{1 + e^{0T} x^{(i)}} \right) - \left(\frac{1 - y^{(i)}}{1 - y^{(i)}} \right) log \left(\frac{1}{1 + e^{0T} x^{(i)}} \right) \right] \\
= \frac{1}{m} \sum_{i=1}^{\infty} \left[-y^{(i)} log \left(\frac{1}{1 + e^{0T} x^{(i)}} \right) - \left(\frac{1 - y^{(i)}}{1 - y^{(i)}} \right) log \left(\frac{1}{1 + e^{0T} x^{(i)}} \right) \right] \\
= \frac{1}{m} \sum_{i=1}^{\infty} \left[-y^{(i)} log \left(\frac{1}{1 + e^{0T} x^{(i)}} \right) - \left(\frac{1 - y^{(i)}}{1 - y^{(i)}} \right) log \left(\frac{1 - y^{(i)}}{1 + e^{0T} x^{(i)}} \right) \right] \\
= \frac{1}{m} \sum_{i=1}^{\infty} \left[-y^{(i)} log \left(\frac{1}{1 + e^{0T} x^{(i)}} \right) - \left(\frac{1 - y^{(i)}}{1 - y^{(i)}} \right) log \left(\frac{1 - y^{(i)}}{1 + e^{0T} x^{(i)}} \right) \right] \\
= \frac{1}{m} \sum_{i=1}^{\infty} \left[-y^{(i)} log \left(\frac{1 - y^{(i)}}{1 + e^{0T} x^{(i)}} \right) - \left(\frac{1 - y^{(i)}}{1 - y^{(i)}} \right) log \left(\frac{1 - y^{(i)}}{1 + e^{0T} x^{(i)}} \right) \right] \\
= \frac{1}{m} \sum_{i=1}^{\infty} \left[-y^{(i)} log \left(\frac{1 - y^{(i)}}{1 + e^{0T} x^{(i)}} \right) - \left(\frac{1 - y^{(i)}}{1 - y^{(i)}} \right) log \left(\frac{1 - y^{(i)}}{1 + e^{0T} x^{(i)}} \right) \right] \\
= \frac{1}{m} \sum_{i=1}^{\infty} \left[-y^{(i)} log \left(\frac{1 - y^{(i)}}{1 + e^{0T} x^{(i)}} \right) - \left(\frac{1 - y^{(i)}}{1 - y^{(i)}} \right) log \left(\frac{1 - y^{(i)}}{1 + e^{0T} x^{(i)}} \right) \right] \\
= \frac{1}{m} \sum_{i=1}^{\infty} \left[-y^{(i)} log \left(\frac{1 - y^{(i)}}{1 + e^{0T} x^{(i)}} \right) - \left(\frac{1 - y^{(i)}}{1 + e^{0T} x^{(i)}} \right) log \left(\frac{1 - y^{(i)}}{1 + e^{0T} x^{(i)}} \right) \right] \\
= \frac{1}{m} \sum_{i=1}^{\infty} \left[-y^{(i)} log \left(\frac{1 - y^{(i)}}{1 + e^{0T} x^{(i)}} \right) - \left(\frac{1 - y^{(i)}}{1 + e^{0T} x^{(i)}} \right) log \left(\frac{1 - y^{(i)}}{1 + e^{0T} x^{(i)}} \right) \right] \\
= \frac{1}{m} \sum_{i=1}^{\infty} \left[-y^{(i)} log \left(\frac{1 - y^{(i)}}{1 + e^{0T} x^{(i)}} \right) - \left(\frac{1 - y^{(i)}}{1 + e^{0T} x^{(i)}} \right) log \left(\frac{1 - y^{(i)}}{1 + e^{0T} x^{(i)}} \right) \\
= \frac{1}{m} \sum_{i=1}^{\infty} \left[-y^{(i)} log \left(\frac{1 - y^{(i)}}{1 + e^{0T} x^{(i)}} \right] log \left(\frac{1 - y^{(i)}}{1 + e^{0T} x^{(i)}} \right) log \left(\frac{1 - y^{(i)}}{1 + e^{0T} x^{(i)}} \right) \\
= \frac{1}{m} \sum_{i=1}^{\infty} \left[-y^{(i)} log \left(\frac{1 - y^{(i)}}{1 + e^{0T} x^{(i)}} \right) log \left(\frac{1 - y^{(i)}}{1 + e^{0T} x^{(i)}}$$

Diff wit D.





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11	1	1	C	1		_	
4	(T	0	ワ	_	3	6

SC+2617=112

which is same as diff eq obtained

4. Rigid Body Transformations:

2) one at a time as the no. of mults & adds will be lower as we are doing matrix x vector product at each step rather than matrix x matrix product that is done in till other nor method.

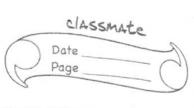
3 BP = BRAP

 $P = R_{\chi}(30^{\circ}) R_{\chi}(20^{\circ}) P$

Bp = R (20°) R (30°) Ap

BRA

B RA = \(\cusgo \singo \) \(\singo \cusgo \)



RA =	00520	sin20 cos30	sin2osin30
14	-sin20	WS20 COS30	coszosin30
	0	-sin 30	(0530

BRA

compute similarly!

current axis votation.

given rotation matrix: R=R R 2(303°) ×(45°)

	comp	uted on mat	Cabl	Classmate Date Page
	=	6-1543	0.5190	-0.8407
		-0.9880	0.0810	-0.1313
		0	0-8509	0.5253
-				1
4)	n) b) Sul	notilute va	A	
4)	c),	estiture regiuse	d value in	worthern code for
	- 4 (
		3 8		
		R.		
		<u> </u>	E Endsdey (1)	
+			N 1	
+			(200)	
		X 200		
		20 - 2 20 10 10	1	
1				
+				