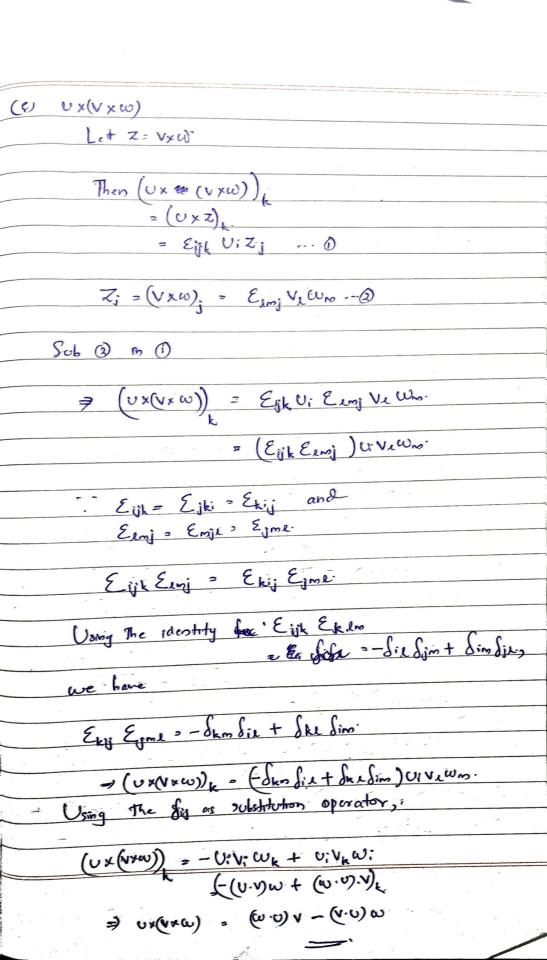
To prove . (a) - P(U. () . (VU)U 1 9 (v.v) = 1 2 (v.v.) = 1 (0:90: + 0:90:) - U. du: = (YU) U: - ((PUT, U) (b) To prove, V(\$Tv) - \$ V(Tv)+(Tv)® V\$. () (Tik Ve) = \$ 0 (Tik Vk) + (Tik Vk) 3\$ - (\$ >(Tv); \$ \$); = (\$ 7(Tv) + Tv 8 7 6)

→ (V.(AKU)) 20



2) biven square skew-symmetric mat	nx a⊗b-b⊗a.
Let 6 c = a8b - b8a.	
Let the axial vector required be	d·
Then for an arbitrary u	y
Cu = dxu.	
(98p-p@d)0 = qx0.	
(a86- 68a) U'	
- (a @b) v - (b@a) v.	
= (b.v)a - (a.v)b.	
0	from the identity
But This is same as Ux(axb)	
	= (y·x)x+(z·z)y
	or hore
	Ox(axb)
	= (b. v)a - (a. Vb.
· · · · · · · · · · · · · · · · · · ·	-
px2 = -2xp , p,2 vectors.	
>-(a×b) ×v > d×v.	
or d = - (axb)	

os d=bxa

3) I frien W, W. - skew symmetric tensors. w, , wz - axial vectors. To prove, W.Wz = wz @ w, - (w, wz) I Take an arbitrary vector v. Then W. Wzv = W, (W.V) = W1 (w, xv) If wxxv= u, Then Wi (WZXV) = W,0 = WXV = WIX (QZXV) Using The triple cross product identity, ω, x (ω,xw) = (ν.ω,) ω, - (ω, ω,) ν. But (1. wywx is same as (wz@wi)V. and (expersion or some or 3 W, W, V = W, 00 1 (w, (3) w,) v - (w, w,) v or (W, W) V = (w, & w, - w2. w1) v -> WIN = WDWI- (Uz. WI)].

	(Tomasa) (1107) - Tal (7)
	40 To prove: log(det(T)) = Tr(log(T))
	Diagonalizing T give
	T=XAX, A being the diagonal
	matrix.
ŧ	
	Then det (T)= det (X) det (X) det (X)
	- det (1) = 1,12 ds A has eigenvolus
	Also (log (T)) - log (x 1 x) 1, 1, 13 os its
	elements.
F	= dog (x) the g (1) to y(x)
ž Ž	
1	= digCo
	3
	= \(\frac{1}{2} \log(\lambda;) \)
	a log(lideds), his being the
	= egenvalus of T.
ir.	e denous of 1.
er.	Thus log(det(T)) = log(l.deds)
	Thur log(det(T)) = log(1. deds) and Tr(log(T)) = log(1. deds)
	Thus log(det(T)) = log(l.deds)
	Thur log(det(T)) = log(1. deds) and Tr(log(T)) = log(1. deds)
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