

Mohammad Ali Jinnah University

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Quiz 3

Name: Muhamad Fahad

Id: FA19-BSSE-0014

Subject: Linear Algebra (Fall 2020)

Section: AM

Teacher: Dr. Asmat Ara

Date: Friday, December 11, 2020

Total Marks:10

Mohammad Ali Jinnah University

Linear Algebra Quiz 3 Morning Program

Instructor Name: Dr. Asmat Ara

Date: 9- 12 -2020 Time:

Q#1 If V be the set of all ordered pairs of real numbers, and consider the following addition and scalar multiplication operations on $u = (u_1, u_2)$ and $v = (v_1, v_2)$:

$$u + v = (u_1 + v_1, u_2 + v_2)$$

 $kv = (0, kv_2)$

- A. Compute u + v and kv for u = (2, 1) and v = (2, 4), and k = 2.
- B. V is the standard addition operation on R^2 , certain vector space axioms hold for V because they are known to hold for R^2 , which axioms are they?
- C. Show that Axiom 7, 8, and 9 hold.
- D. Show that Axiom 10 fail.

	Muhammad Jahad
	FAID - 3228 - 614
Quiz#3	Date: 11/12/2020
Q1)	n (exer) all for
	* 1 kg = 112 g = 11 to 12
A) Compute U+V and KV (u	(2,1) & V=(2,4) & K=3
$U+V=(U,+V,,U_2+V_1)$	11 10 - 11 (6)
U+V=(2+2,1+4)	The state of the s
	1 101 101
$KV = K(V, V_0)$	1.0.4 (1)
KA = (0, 8) $KA = 5(5' \pi)$ [: K)	V = (0, V.)]
KV = (0, 8)	
B)	= (U-) + U (V
B) 	
(11 - 11) - (11 - 11) + 1	
(U, , V,) + (V, , V,) + V	(н.Р)
ii) U + V = V + U (ii	0 0)
	+ (U, , U,) (H.P)

$ \begin{array}{l} \text{(ii)} & \text{U*}(\text{V*}\omega) = (\text{U*}\text{V}) + \omega \\ & \text{(U,U*}(\text{V},\text{V}) + (\text{W},\text{*}\omega_*)) = (\text{U,V}) + (\text{V},\text{g}\text{V}_*)) + (\text{W},\text{g}\omega_*)^2 \\ & \text{(U, U*}(\text{V},\text{V}_*) + (\text{W},\text{g}\omega_*)) = (\text{U,v}\text{V}_*,\text{V}_*\text{V}_*) + (\text{W},\text{U}_*)^2 \\ & \text{(U, V},\text{V}_*\text{V}_*,\text{V}_*\text{V}_*\text{V}_*) = (\text{U,v}\text{V}_*,\text{V}_*\text{V}_*\text{V}_*) + (\text{W},\text{U}_*)^2 \\ & \text{(U, V}_*\text{V}_*\text{V}_*\text{V}_*) = (\text{U, V}_*\text{V}_*\text{V}_*\text{V}_*\text{V}_*\text{V}_*\text{V}_*\text{V}_*\text{V}_*\text{V}_*) \\ & \text{(U, V)} + (\text{O},\text{O}) = (\text{U},\text{V}_*) \\ & \text{(U, V)} + (\text{O},\text{O}) = (\text{U},\text{V}_*) \\ & \text{(U, V)} + (\text{V}_*\text{V}_*\text{V}_*) = (\text{U},\text{V}_*\text{V}_*) \\ & \text{(U, V)} + (\text{V}_*\text{V}_*\text{V}_*) = (\text{U},\text{V}_*\text{V}_*) \\ & \text{(U, V)} + (\text{V}_*\text{V}_*\text{V}_*) = (\text{U},\text{V}_*) \\ & \text{(U, V)} + (\text{V}_*\text{V}_*\text{V}_*\text{V}_*) = (\text{U},\text{V}_*\text{V}_*) \\ & \text{(U, V)} + (\text{V}_*\text{V}_*\text{V}_*) = (\text{V}_*\text{V}_*\text{V}_*) \\ & \text{(U, V)} + (\text{V}_*\text{V}_*\text{V}_*) = (\text{V}_*\text{V}_*\text{V}_*) \\ & \text{(U, V)} + (\text{V}_*\text{V}_*\text{V}_*) = (\text{V}_*\text{V}_*\text{V}_*) \\ & \text{(U, V)} + (\text{V}_*\text{V}_*) = (\text{V}_*\text{V}_*\text{V}_*) \\ & \text{(U, V)} + (\text{V}_*\text{V}_*) = (\text{V}_*\text{V}_*\text{V}_*) \\ & \text{(U, V)} + (\text{V}_*\text{V}_*) = (\text{V}_*\text{V}_*) \\ & (U, V)$	
$ (U_{1}, U_{2})(V_{1}, V_{2}) + (\omega_{1}, \omega_{2}) = ((U_{1}, U_{2}) + (V_{1}, qV_{2})) + (\omega_{1}, \omega_{2}) + (U_{1}, U_{2}) + (V_{1}, qV_{2}) + (\omega_{1}, \omega_{2}) + (U_{1}, U_{2}) + (V_{1}, qV_{2}) + (U_{1}, Q_{1}, Q_{2}) + (U_{1}, Q_{2}, Q_{2}) + (U_{1}, Q_{2}, Q_{2}, Q_{2}) + (U_{1}, Q_{2}, Q_{2}, Q_{2}) + (U_{1}, Q_{2}, Q$	
$ (U_{1}, U_{2})(V_{1}, V_{2}) + (\omega_{1} + \omega_{2}) = (U_{1}, U_{2}) + (V_{1}, Q_{2}) + (\omega_{1}, \omega_{2}) + (\omega_{2}, \omega_{2}) + (\omega_{2$	(1) 11 (V+W) = (1)+V) 111
$ (U_{1}, U_{2})_{*}(V_{1}+U_{1}, V_{2}+U_{2}) = (U_{1}+V_{1}, V_{2}+V_{2})_{*}(U_{1}+V_{1}+U_{2})_{*}(U_{1}+V_{1}+U_{2})_{*}(U_{1}+V_{1}+U_{2})_{*}(U_{1}+V_{1}+U_{2})_{*}(U_{1}+V_{2}+U_{2}+U_{2})_{*}(U_{1}+V_{2}+U_{2})_{*}(U_{1}+V_{2}+U_{2}+U_{2})_{*}(U_{1}+V_{2}+U_{2}+U_{$	£
$ (U_{1}, U_{2})_{*}(V_{1}+U_{1}, V_{2}+U_{2}) = (U_{1}+V_{1}, V_{2}+V_{2})_{*}(U_{1}+V_{1}+U_{2})_{*}(U_{1}+V_{1}+U_{2})_{*}(U_{1}+V_{1}+U_{2})_{*}(U_{1}+V_{1}+U_{2})_{*}(U_{1}+V_{2}+U_{2}+U_{2})_{*}(U_{1}+V_{2}+U_{2})_{*}(U_{1}+V_{2}+U_{2}+U_{2})_{*}(U_{1}+V_{2}+U_{2}+U_{$	(1) 11 1(1) 1(1) 1(1) 1(1) 1(1) 1(1) 1(
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	10, 10, 1(1, 1/2) + (w,+w)) = (0, 10, 14(1, 14, 14)) + (w,+w)
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	(U, 1 U) + (V, +W, , V + W2) = (U, +V, , W2 + V2) + (W, 1 W2)
$ (U, V_{+}) + (0,0) = (U, V_{+}) $ $ (U, +0, U_{+} +0) = (U, +V_{+}) $ $ (U, , U_{+}) = (U, , U_{+}) (H.P) $ $ (U, +U_{+}) + (-(U, , U_{+})) = (0,0) $ $ (U, +U_{+}) + (-(U, , U_{+})) = (0,0) $	THE FOLLY FOR THE STREET OF THE
$ (U, V_{+}) + (0,0) = (U, V_{+}) $ $ (U, +0, U_{+} +0) = (U, +V_{+}) $ $ (U, , U_{+}) = (U, , U_{+}) (H.P) $ $ (U, +U_{+}) + (-(U, , U_{+})) = (0,0) $ $ (U, +U_{+}) + (-(U, , U_{+})) = (0,0) $	(U, + V, +W, , U2+V2+W2) = (U, +V, +W, , V2+V2+W2)
$ (U, V_{+}) + (0,0) = (U, V_{+}) $ $ (U, +0, U_{+} +0) = (U, +V_{+}) $ $ (U, , U_{+}) = (U, , U_{+}) (H.P) $ $ (U, +U_{+}) + (-(U, , U_{+})) = (0,0) $ $ (U, +U_{+}) + (-(U, , U_{+})) = (0,0) $	(H.P)
$ (U, V_{+}) + (0,0) = (U, V_{+}) $ $ (U, +0, U_{+} +0) = (U, +V_{+}) $ $ (U, , U_{+}) = (U, , U_{+}) (H.P) $ $ (U, +U) = 0 $ $ (U, +U_{+}) + (-(U, , U_{+})) = (0,0) $ $ (U, -U, , U_{+} - U_{+}) = (0,0) $	U= 0 + U (Vi
	$(V_1, V_2) * (0,0) = (V_1, V_2)$
$(U_{1}, U_{2}) = (U_{1}, U_{2}) (H \cdot P)$ $(U_{1}, U_{2}) = 0$ $(U_{1}, U_{2}) + (-(U_{1}, U_{2})) = (0, 0)$ $(U_{1}, U_{2}) + (-(U_{1}, U_{2})) = (0, 0)$	
$(U_{1}, U_{2}) = (U_{1}, U_{2}) (H \cdot P)$ $(U_{1}, U_{2}) = 0$ $(U_{1}, U_{2}) + (-(U_{1}, U_{2})) = (0, 0)$ $(U_{1}, U_{2}) + (-(U_{1}, U_{2})) = (0, 0)$	(1) +0,1) - (1,0)
$V) U + (-U) = 0$ $(U, \circ U_{2}) + (-(U_{1}, U_{1})) = (0, 0)$ $(U, -U_{1}, U_{2} - U_{2}) = (0, 0)$	
$V) U + (-U) = 0$ $(U, \circ U_{2}) + (-(U_{1}, U_{1})) = (0, 0)$ $(U, -U_{1}, U_{2} - U_{2}) = (0, 0)$	
$(U, *U_2) + (-(u_1, u_2)) = (0, 0)$ $(U, -U, U_2 - U_2) = (0, 0)$	H.P
$(U, *U_2) + (-(u_1, u_2)) = (0, 0)$ $(U, -U, U_2 - U_2) = (0, 0)$	
$(v_1 - v_1, v_2 - v_3) = (o, o)$	V) U + (-U) = 0
$(U_1 - U_1)_1 = (0,0)$	karal (i')
$(v_1 - v_1, v_2 - v_3) = (o, o)$	(U * U) + (-(U, U)) = (0, 0)
	(1) (1) (1) -11/-(0)
(0,0)=(0,0)(H.P)	(0, -0, 1, 0, -0, 0)
$(0,0) = (0,0) (H \cdot P)$	
	$(0,0)=(0,0)(H\cdot P)$

C) Show that Ixiom 7,8 Epg hold (Wm) 4 (8
+) K (U+V) = KU+KV
K(U,, U,) + (V,, V) = K(U,, U2) + K(V,, V2)
K(U,+V,, U2+V2) = K (KU, 9 KU2) + (KV, 9 KV.)
(K(U,,V), K(U,+V2)) = (0, KU2) + (0, KV2)
(O, K(U,+V,)) = (O, (KU,+KV,))
$(O, K(U_2+V_1)) = (O, K(U_2,V_2)) (HOW)$
8) (K+m) U = KU+ mU
$(K+m)U_1, (K+m)U_2 = K(U_1,U_2) + m(U_1,U_2)$
$\overline{U}_{1}\left(0,\left(K_{1}m\right)U_{1}\right)=\overline{U}\left(0,\left(K_{1}m\right)U_{1}\right)$
(U, (K+m)U2) = (O, (K+m)U2) (HOID)

