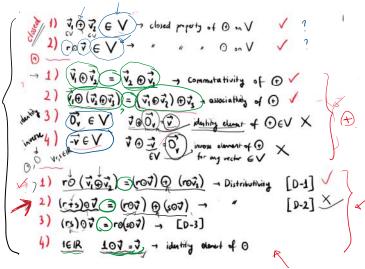
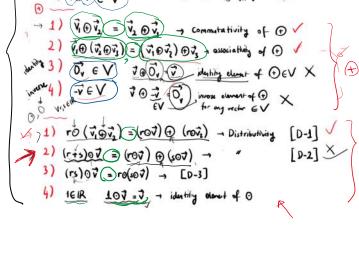
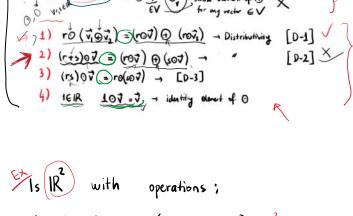
## 6th Week Friday

31 Mart 2023 Cuma 10:26







$$\forall relk, \quad roctor space?$$

$$(x_1,y_1) \textcircled{+} (x_2,y_2) = (x_1+x_2,y_1+y_2) elk^2$$

$$\forall relk, \quad roctor space?$$

$$\frac{A_{1,2}e_{g_{s}}}{1} \qquad L \odot \left( \underbrace{(x^{1,4}x^{7}, \overline{A^{1,4}A^{9}})}_{(\overline{x^{1,4}x^{7}}, \overline{A^{1,4}A^{9}})} \right) = \left( \underbrace{L(x^{1}+x^{9}), \overline{A^{1,4}A^{9}}}_{(\overline{x^{1,4}x^{9}}, \overline{A^{1,4}A^{9}})} \right)$$

2) LHS: 
$$(r+s) \odot (x,y) = ((r+s)x,y)$$

$$r = 3 \quad s = -1 \quad (1,2)$$

$$(s)^{x} = (1,2)$$

$$(1,2) = (2,2)$$

$$2 \odot (1,2)$$

(cd)  $r(x,y) = (x,y) \in V$  exist dosel under O

 $\frac{1}{2} \left\{ \left( \frac{x}{y} \right) : x, y \in \mathbb{R}, \left( \frac{x \leq 0}{y} \right) \right\}, \leftarrow$ 

with usual vector addition and scalar multiplication

 $(x_1,y_1)\oplus(x_1,y_2)=(x_1+x_2,y_1+y_2)\in V$   $(x_1,y_1)\oplus(x_1,y_2)=(x_1+x_2,y_1+y_2)\in V$   $(x_1,y_1)\oplus(x_1,y_2)=(x_1+x_2,y_1+y_2)\in V$   $(x_1,y_1)\oplus(x_1,y_2)=(x_1+x_2,y_1+y_2)\in V$ 

$$\frac{\text{RHS}:}{(r \times_{1}, y_{1})} \bigoplus \frac{(r \times_{2}, y_{1})}{(r \times_{2}, y_{1})} = (r \times_{2}, y_{1})$$

a vector space? NO!

yrent (x,y) ⊕ (x2, 12) = (x1+x2, y1+y2) } → r (x,y) = (rx, ry)

a set of vectors

$$30(1,2) \oplus (-1)0(1,2) = (3,2) \oplus (-1,2) = (2,4)$$

12. Let R+ denote the set of positive real numbers. Define the operation of scalar multiplication, denoted o, by

$$(x) = x^{\alpha}$$

for each  $x \in \mathbb{R}^+$  and for any real number  $\alpha$ . Define the operation of addition, denoted  $\oplus$ , by

$$x \oplus y = x \cdot y$$
 for all  $x, y \in R^+$ 

Thus, for this system, the scalar product of -3times ½ is given by

$$\Rightarrow \frac{e^{\frac{3}{2}}}{2} = \left(\frac{1}{2}\right)^{\frac{3}{2}} = 8e^{\frac{3}{2}}$$

$$\Rightarrow \underbrace{2 \oplus 5}_{\text{ext}} = \underbrace{2 \cdot 5}_{\text{ext}} = \underbrace{10}_{\text{ext}}$$

Is  $R^+$  a vector space with these operations? Prove your answer.

1) 
$$\vec{v}_1 \otimes \vec{v}_2 \in V \rightarrow \text{closed printy of } \Theta \text{ in } V$$

2)  $\vec{v}_1 \otimes \vec{v}_2 = \vec{v}_2 \otimes \vec{v}_1 \rightarrow \text{consmatativity of } \Theta \checkmark V$ 

2)  $\vec{v}_1 \otimes (\vec{v}_2 \otimes \vec{v}_2) = (\vec{v}_1 \otimes \vec{v}_2) \otimes \vec{v}_2 \rightarrow \text{associability of } \Theta \checkmark V + (y + \bar{v}) = xol(y2) = y7^{\pm}$ 

2)  $\vec{v}_1 \otimes (\vec{v}_2 \otimes \vec{v}_2) = (\vec{v}_1 \otimes \vec{v}_2) \otimes \vec{v}_2 \rightarrow \text{associability of } \Theta \checkmark V + (y + \bar{v}) = xol(y2) = y7^{\pm}$ 

2)  $\vec{v}_1 \otimes \vec{v}_2 \otimes \vec{v}_1 \otimes \vec{v}_2 \otimes$ 

