$u+\frac{1}{u} = u\cdot\frac{1}{u} = 1$

5) $u+v = uv = vu = v+u$.

6) $u \in \mathbb{R}^+$
$\alpha \in \mathbb{R}$
$\alpha u = u^{\alpha} \in \mathbb{R}^+$

7) $\alpha(u+v) = \alpha(uv) = (uv)^{\alpha} = u^{\alpha}v^{\alpha}$
$\alpha u + \alpha v = u^{\alpha} + v^{\alpha} = u^{\alpha}v^{\alpha}$

8) $(\alpha+\beta)u = u^{\alpha+\beta}$
$\alpha u + \beta u = u^{\alpha} + u^{\beta} = u^{\alpha}u^{\beta} = u^{\alpha+\beta}$

$(\alpha+\beta)u = u^{\alpha+\beta}$
$= u^{\alpha}\cdot u^{\beta}$
$= \alpha u \cdot \beta u$
$= \alpha u + \beta u$

9) $\alpha(\beta u) = \alpha(u^{\beta}) = u^{\beta\alpha}$
$(\alpha\beta)u = u^{\alpha\beta}$
$\beta(\alpha u) = \beta(u^{\alpha}) = u^{\alpha\beta}$

10) $1\cdot u = u^{1} = u$

$\therefore$ $\mathbb{R}^+(\mathbb{R})$ is a vector space.

Ex-6:- $\mathbb{R}^2(\mathbb{R})$

$\alpha u = \alpha(x,y) = (2\alpha x, \alpha y)$ & normal addition.

$\therefore$ $\mathbb{R}^2(\mathbb{R})$ is an abelian group under addition

but $1\cdot u = 1(x,y) = (2x, y) \neq u$

$\therefore$ $\mathbb{R}^2(\mathbb{R})$ is not a V.S.