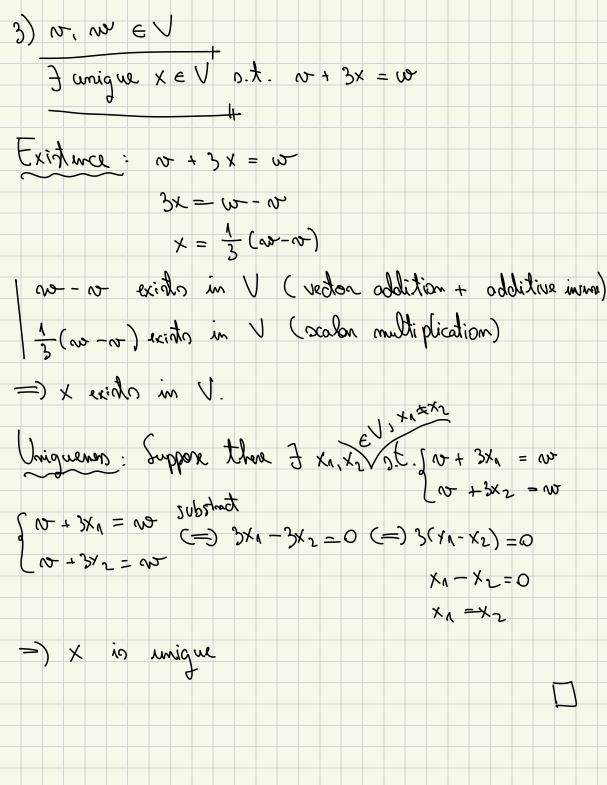
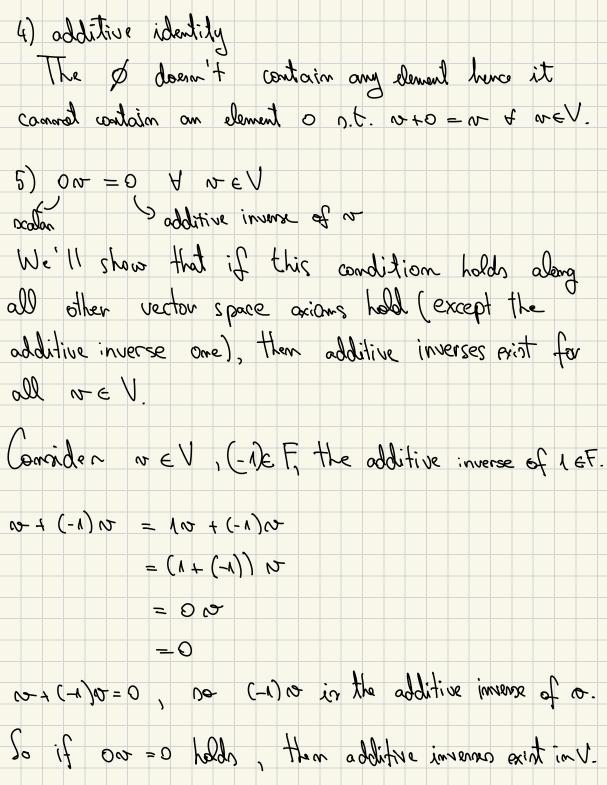
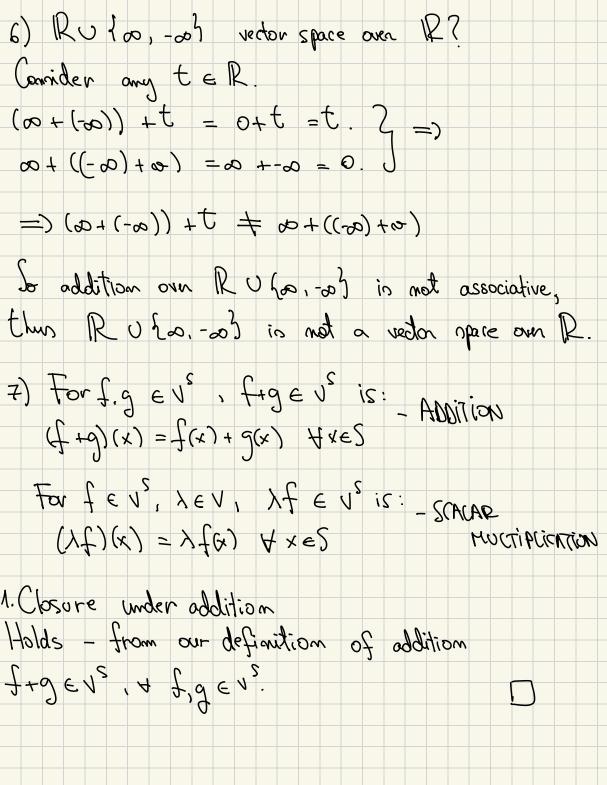
1)
$$-(-v) = v$$
 (d) $v \in V$
 $v + (-v) = 0$ d $v \in V$ (additive inverse)
 $(-v) + (-(-v)) = 0$ d $v \in V$ (additive inverse)
The additive inverse of $(-v)$ is unique
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2. Commutativity -
$$\forall f, g \in V^{S}$$

$$f + g = (f + g)(x)$$

$$= f(x) + g(x)$$

$$= g(x) + f(x)$$

$$= g(x) + f(x)$$

$$= g(x) + f(x)$$

$$= g(x) + f(x)$$

$$= f(x) + g(x) + g(x)$$

$$= f(x) + g(x)$$

$$= f(x)$$

So there exists
$$-f \in V_2$$
 s.t. $f + (-f) = 0$, $Af \in V_2$

$$(f + (-f))(x) = f(x) + (-f)(x) = -f(x) + Axes$$

$$(f + (-f))(x) = f(x) + (-f)(x) = -f(x) + Axes$$

$$(f + (-f))(x) = f(x) + (-f)(x) = -f(x) + Axes$$

$$(f + (-f))(x) = f(x) + (-f)(x)$$

$$= f(x) + (-f)(x)$$

$$=$$

6. Mulliplicative identity Assume 1 is multiplicative identity in V. 1f = (1/10x) = 1/6x = 1/6xSo there exists NEU s.t. If = f & fevs. 7. Distribuitivity
Suppose 2, BEV, fige vs. (q(+4)) = q((+4)(4)) =7 (f(x)+d(x)) =1fa) + fda) =77 +93 (So 2 (419) = 2f + 19 4 2 EV, f, g EVS. ((2+B)f = (C2+B)f)(x) $=(2+\beta)f(x)$ =9f(x) + Bf(x) =7£ +B£ (2+B)f= 2f+ Bf & 2,BEV, fev. Ũ 1...7 =) given our prior définitions of addition 1 scalon mult.

8) Uc - complex vector space . V - 900l redor space. For any element XEVc: x=ution with u.veV 1. Commutativity Suppose x, y ∈ Vc. X+9 = (Xu + ixv) + (yu + iyu) = (x0 + y0) + i(x1 + y1) =(yu +xu) + c(yy +xv) = (ya + iyu) + (xa + ixu) = v/t x2. Hasociativity (addition) Suppose X, y, te Vc. X+(9+2) = (xa+ixv) + ((9a+2a) +i(9a+2a)) = (xn+ yn+ 2n) + i (xn+ yn+ 2n) = ((xu+yu)+i(xv+yv))+(tu+i2v) =(X+9) + 2. 3. Associativity (multiplication)

4) Additive identity Suppose 0 ∈ Vc ; 0 = out oir with u, o ∈ V SER $X+0 = (Xu + iX_{\sigma}) + (0u + 0(in))$ = (xu+0) + i(xv+0) = Xa + ixa So, I clarent OEVe s.E. X+O=X Y XEVe. 5) Additive inverse Suppose - x = V = n.t. -x = (-xu) + i(-xu) -xu, -xv ∈ V and are the additive inverses of xu, xo $\chi + (-x) = (\chi_{\alpha} + i\chi_{\alpha}) + ((-\chi_{\alpha}) + i(-\chi_{\alpha}))$ = ((u + (-xu)) + i (xo + (-xo)) 0 1+ 0 = =0. De, J Demont -x ∈ Vc D. t. x+(-x) =0 4 x∈ Vc.

6) Multiplicative identity Consider the oxolor 1= 1+0; EC $\sqrt{X} = (\sqrt{+0i})(\sqrt{x} + ix^{\omega})$ $= (1 \times \alpha - 0 \times \alpha) + 1(1 \times \alpha + 0 \times \alpha)$ = Xu +ixo 7) Distributivity Consider X, y ∈ Vc. 2, B∈ C. d(x+9) =(a+bi) ((xu+9u)+i(xv+yv)) =(a(xa+ya) - b(xx+yv))+i(a(xx+yv)+b(xx+ya)) =(axu tagu -bxn - byo) +i(axo tago -bxn +byn) =((axa-bxa-) + i(axa +bxa)) + ((aga-bga)+i(aga+bga)) = (a+bi)(xx+ixx) + (a+bi)(yx+iyx) = 7x + 73

$$(3+\beta) x = ((a+bi) + (c+di)) (x_0 + ix_0)$$

$$=((a+c) + i(b+d)) (x_0 + ix_0)$$

$$=((a+c) + i(b+d) + i(a + ix_0) + i(a + ix_0) + i(a + ix_0)$$

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