6. $-(-a)=(a+(-a))+(-(-a))$ (Symmetry of eq on ...)

7. $-(-a)=a+((-a)+(-(-a)))$ (Transitivity of eq on 6,5)

8. $(-a)+(-(-a))=0$ (A4) 9. $a+((-a)+(-(-a)))=a+0$ (Substitution on 8)

10. $a+0=a$ (A3) 11. $a+((-a)+(-(-a)))=a$ (Transitivity of eq on 9,10)

12. $-(-a)=a$ (Transitivity of eq on 7,11)

c) $(-1)a=-a$ → Very beautiful

Proof: 1. By Trichotomy property, either $(-1)a>-a$, or $(-1)a<-a$, or $(-1)a=-a$

2. Let, $(-1)a>-a$ 3. $(-1)a-(-a)\in P$ (Defn. 2.1.6 (a) on 2.)

4. $\because P$ is non-empty, $(-1)a-(-a)=c$ for some $c\in P$.