

Homework 2

due on 9/14/11

#1. Section 2.2 Exercise 2

#2. Section 2.2 Exercise 3

#3. Section 2.2 Exercise 5

#4. Section 2.2 Exercise 7

#5. Section 2.3 Exercise 2

#6. Section 2.3 Exercise 7

#7. Section 1.2 Exercise 8

#8. Define

$$\oplus : \mathbb{R} \times \mathbb{R} \rightarrow \mathbb{R}, \quad (v, w) \rightarrow \max(v, w)$$

and

$$\odot : \mathbb{R} \times \mathbb{R} \rightarrow \mathbb{R}, \quad (a, v) \rightarrow av$$

Which of the eight axioms of a vector space hold for $(\mathbb{R}, \oplus, \odot)$? Is $(\mathbb{R}, \oplus, \odot)$ a vector space?

#9. Define

$$\oplus : \mathbb{R} \times \mathbb{R} \rightarrow \mathbb{R}, \quad (v, w) \rightarrow \sqrt[3]{v^3 + w^3}$$

and

$$\odot : \mathbb{R} \times \mathbb{R} \rightarrow \mathbb{R}, \quad (a, v) \rightarrow \sqrt[3]{a} v$$

Which of the eight axioms of a vector space hold for $(\mathbb{R}, \oplus, \odot)$? Is $(\mathbb{R}, \oplus, \odot)$ a vector space?