

## Real Algebraic Geometry II

### Final Sheet

#### Exercise A

Let  $(L, w)|(K, v)$  be an immediate extension of valued fields, i.e.  $v(a) = w(a)$  for any  $a \in K$  and  $v(K^\times) = w(L^\times)$  as well as  $Kv = Lw$ . Show that any  $v$ -compatible ordering on  $K$  extends to a  $w$ -compatible ordering on  $L$ .

#### Exercise B

Let  $K$  be an ordered field which is root closed for positive elements and let  $e$  be an exponential on  $K$ . Moreover, let  $a \in K$  such that  $e(a) = 2$ .

Show that the map

$$f: K \rightarrow K, x \mapsto e(ax)$$

defines a  $v$ -compatible exponential on  $K$ .

*Solutions of this sheet will not be marked. If you have any questions, you may come to our office hours.*