

**Definition MunkTop.14.1:** If  $R$  is a strict sipmle order on  $X$  and  $a, b \in X$  then  $(a, b) = \{x \in X : aRxRb\}$ .

**Definition MunkTop.14.1.A:** If  $R$  is a strict sipmle order on  $X$  and  $U \subseteq X$  then  $U$  is an *open interval* in  $X$  under the order  $R$  if and only if there exist  $a, b \in X$  such that  $U = (a, b)$ .

**Definition MunkTop.14.2:** If  $R$  is a strict sipmle order on  $X$  and  $a, b \in X$  then  $[a, b]$  is the set of  $x \in X$  such that  $aRxRb$  or  $x = b$ .

**Definition MunkTop.14.2.A:** If  $R$  is a strict sipmle order on  $X$  and  $W \subseteq X$  then  $W$  is an *open-closed interval* in  $X$  under the order  $R$  if and only if there exist  $a, b \in X$  such that  $W = (a, b]$ .

**Definition MunkTop.14.3:** If  $R$  is a strict sipmle order on  $X$  and  $a, b \in X$  then  $[a, b)$  is the set of  $x \in X$  such that  $aRxRb$  or  $x = a$ .

**Definition MunkTop.14.3.A:** If  $R$  is a strict sipmle order on  $X$  and  $W \subseteq X$  then  $W$  is a *closed-open interval* in  $X$  under the order  $R$  if and only if there exist  $a, b \in X$  such that  $W = [a, b)$ .

**Definition MunkTop.14.4:** If  $R$  is a strict sipmle order on  $X$  and  $a, b \in X$  then  $[a, b]$  is the set of  $x \in X$  such that  $aRxRb$  or  $x = a$  or  $x = b$ .

**Definition MunkTop.14.4.A:** If  $R$  is a strict sipmle order on  $X$  and  $F \subseteq X$  then  $F$  is a *closed interval* in  $X$  under the order  $R$  if and only if there exist  $a, b \in X$  such that  $F = [a, b]$ .

**Definition MunkTop.14.5:** If  $R$  is a strict sipmle order on  $X$  then *the basis for the order topology on  $(X, R)$*  is the set of  $U$  such that there exist  $a, b \in X$  such that  $U = (a, b)$  or  $a$  is a first element in  $X$ , under  $R$  and  $U = [a, b)$  or  $b$  is a last element in  $X$ , under  $R$  and  $U = (a, b]$ .

**Definition MunkTop.14.6:** If  $R$  is a strict sipmle order on  $X$  then *the order topology on  $(X, R)$*  is the topology on  $X$  generated by the basis for the order topology on  $(X, R)$ .

**Definition MunkTop.14.7:** If  $R$  is a strict sipmle order on  $X$  and  $a \in X$  then  $(a, +\infty) = \{x \in X : aRx\}$ .

**Definition MunkTop.14.8:** If  $R$  is a strict sipmle order on  $X$  and  $a \in X$  then  $(-\infty, a) = \{x \in X : xRa\}$ .

**Definition MunkTop.14.9:** If  $R$  is a strict sipmle order on  $X$  and  $a \in X$  then  $[a, +\infty)$  is the set of  $x \in X$  such that  $aRx$  or  $x = a$ .

**Definition MunkTop.14.10:** If  $R$  is a strict sipmle order on  $X$  and  $a \in X$  then  $(-\infty, a]$  is the set of  $x \in X$  such that  $xRa$  or  $x = a$ .