Exercise 19 solution: First note $eo(x_0, F) + 1 = \{ F^i(x_0) + j + 1 \ : \ i, j \in \mathbf{Z} \} = \{ F^i(x_0) + k \ : \ i, k \in \mathbf{Z} \} = eo(x_0, F)$. Also, if $x = F^i(x_0) + j \in eo(x_0, F)$, then $H(x+1) = H(F^i(x_0) + j + 1) = i\alpha + j + 1 = H(x) + 1$.

Let $y \in \mathbf{R}$. We have

$$H(y+1) = \sup\{ \overline{H}(x) \ : \ x \in eo(x_0), \ x < y + 1 \}$$

$$= \sup\{ \overline{H}(x-1) + 1 \ : \ x \in eo(x_0), \ x - 1 < y \}$$

$$= \sup\{ \overline{H}(x) + 1 \ : \ x \in eo(x_0), \ x < y \}$$

$$= H(y) + 1.$$