Exercise 24 solution:

(a) Let $\epsilon = 0$. Then $F_{\omega,0}(x) = x+\omega$, and $\rho(f_{\omega,0}) = \omega$. Hence $A_r = \{\, (\omega, 0) \,:\, \rho(f_{\omega,0}) = r \,\} = \{(r, 0)\}$.

(b) Let $\epsilon \leq 1$ and $(\omega, \epsilon) \in A_{r_1} \cap A_{r_2}$. Then $\rho(f_{\omega,\epsilon}) = r_1$ and $\rho(f_{\omega,\epsilon}) = r_2$. Since $\epsilon \leq 1$, $F_{\omega,\epsilon}$ is a homeomorphism, and $r_1 = r_2$ by Proposition 1. Hence $A_{r_1} \cap A_{r_2} = \emptyset$ for $\epsilon \leq 1$ and $r_1 \neq r_2$.