HW 6:

You may have already solved the problems below, perhaps differently than my suggestions below. If so, that's good!

5b) Let $f^n(x)$ be the results of applying f n times to x.

i) if possible, pick an x_0 so that $x_0 < x_1 < x_2 <$ ... $< x_n <$ ... where $f^n(x_0) = x_n$. Use the x_n's to find an (x, x) that is a limit point of the graph of f

ii) otherwise $\forall x \; \exists n$ for which $f^n(x) = f^{n+1}(x)$.

Start wih 0. For some n, $f^n(0) = f^{n+1}(0) = x_1$.
Then pick $y > x_1$. For some n, $f^n(y) = f^{n+1}(y) = x_2$
Continue in this way, to define x_i for all i . Then look at the points (x_i, x_i).

5c) Follow the hint given. Assume that for all x, $(x, \omega_1) \notin U$

$f(x) \geq \omega_1$. Prove that for some x, $f(x) = \omega_1$
(if not, then $f : [0, \omega_1) \to [0, \omega_1)$ and
part b) applies to f. Therefore ...)

For this x, look at (x, ω_1)