1. \( y_8 = 3, 2^4 \)
\( 56 = 7, 2^3 \)

56 is to the left of 48 in the Sarkovskii ordering, so there is a continuous map of period 48 which is not of prime period 56.

2. \( 176 = 11, 2^4 \)
\( 96 = 3, 2^5 \)

176 is to the left of 96 in the Sarkovskii ordering, so if a continuous map of 176 has a point of prime period 176 it must also have one of period 96.

3. It cannot happen if \( F \) is continuous. But an example where \( F \) is not continuous is

\[
F(x) = \begin{cases} 
\frac{1}{2} & \text{if } x \in \left[0, \frac{1}{2}\right) \\
1 & \text{if } x \in \left[\frac{1}{2}, \frac{3}{2}\right) \\
0 & \text{if } x \in \left(\frac{3}{2}, 1\right]
\end{cases}
\]

\( F(0) = \frac{1}{2}, \quad F(1) = 1, \quad F(1) = 0 \)
4. in the fract graph, \( F([0,2]) = [1,3] \supset [0,2] \)
and \( F([1,3]) = [0,3] \) the entire interval.
This is very much like the conditions in point 3
implies closure.

Let \( A_1 \) be a closed interval in \([1,3]\) with
\( F(A_1) = [0,3] \). Let \( A_2 \subset [0,2] \) be a closed interval
with \( F(A_2) = A_1 \), there is such an interval \( F([0,2]) = A_1 \).

Since \( F([1,3]) = A_2 \) \( \cap A_3 \) are closed intervals in \([3,5]\)
with \( F(A_3) = A_2 \).

Now \( F(A_3) = F^2(A_2) = F(A_1) = [0,3] \supset A_2 \).

Thus there is a fixed point \( x^* \) for \( F^3 \) on \( A_2 \). Now
\( F(x^*) \in A_2 \subset [0,2] \). \( x^* + 2 \) since \( 2 \) has period 4. Thus \( x^* \) is not fixed. Its orbit is in
\([1,3]\) for two iterations and then in \([0,2] \). Thus
\( x^* \) has period 3.

By Sarkovski's ordering it has points of every
prime period.
\[ f( [1, 5]) = [1, 6], \quad f( [4, 5]) = [1, 5], \quad f( [5, 7]) = [2, 7] \]
\[ f( [2, 5]) = [1, 6], \quad f( [4, 6]) = [3, 7]. \]

\[ f^5( [1, 6]) = 2 \quad \text{a point of period 7 out 5.} \]

Similarly,
\[ f^5( [2, 3]) = [2, 3] \cap [2, 7] = 3 \]
\[ f^5( [3, 4]) = [3, 4] \cap [2, 7] = 4 \]
\[ f^5( [4, 5]) = [4, 5] \cap [2, 7] = 5 \]
\[ f^5( [5, 6]) = [5, 6] \cap [2, 7] = 6. \]

These intersections are all period 7 out period 5.

So the only internal left is \([1, 6]\).

\[ f( [1, 6]) = [1, 6] \quad \text{decreasing} \]
\[ f( [2, 5]) = [2, 6] \quad \text{decreasing} \]
\[ f( [3, 4]) = [3, 5] \quad \text{decreasing} \]
\[ f( [4, 5]) = [4, 6] \quad \text{decreasing} \]
\[ f( [5, 6]) = [5, 7] \quad \text{decreasing} \]
\[ f^5( [1, 6]) = [2, 7] \quad \text{decreasing} \]

\[ f^5 \] is decreasing on \([1, 6]\) as it has only one fixed point which is the original fixed point, so period 5.
7. The integer values give a point of period 6.

\[ F(\frac{4}{3}) = \frac{4}{3} \]
\[ F(\frac{2}{3}) = \frac{2}{3} \]
Points in these two intervals go back and forth, so points in them cannot have odd periods.

\[ F(\frac{3}{4}) = \frac{3}{4} \] and it is decreasing. The points that get cut must stay out, see the first argument.

For odd iterations of \( \frac{3}{4} \), the map is decreasing on what remains in \( \frac{3}{4} \), so it leaves only one fixed point. But this is the original fixed point of period 1. Therefore no point has prime period an odd number larger than 1.