The Matlab file `fpiScript.m` gives two examples.

1. The first example is to:

   - Use FPI on $\cos(x)$ for 15 iterations.
   - Look at the quantity:

   $$\frac{|f(x_n) - f(x_{n-1}|}{x_n - x_{n-1}|} = \frac{|x_{n+1} - x_n|}{|x_n - x_{n-1}|}$$

   The idea being that this should begin to approximate $g'(r) = \sin(r)$ (of course, r is the quantity that we are looking for).

2. The second example illustrates the idea that there are an infinite number of ways of converting the root-finding problem: $f(x) = 0$ to a fixed point problem: $g(x) = x$.

   In this example, we started with: $x^3 + x - 1 = 0$, and we try to solve it using FPI. We illustrate three possible ways of writing the function g (also see the text, page 33, Section 1.2).

   We should see that iterating g_1 will diverge, iterating g_2 will converge, and iterating g_3 will converge even faster ($g_3'(r) = 0$).