\[ n \ln 2 \geq \ln 10^4 \]
\[ n \geq \frac{\ln 10^4}{\ln 2} \]

Fixed point iteration: \( p_{n+1} = g(p_n) \)

Ex. The following 4 methods are proposed to compute \( 7^{\frac{1}{3}} \). Rank them in order based on their apparent speed of convergence.

(a) \( p_n = \left(1 + \frac{7 - p_{n-1}^3}{p_{n-1}^2}\right)^{\frac{1}{2}} \)

(b) \( p_n = p_{n-1} - \frac{p_{n-1}^5 - 7}{p_{n-1}^2} \)

(c) \( p_n = p_{n-1} - \frac{p_{n-1}^5 - 7}{5 p_{n-1}^4} \)

(d) \( p_n = p_{n-1} - \frac{p_{n-1}^5 - 7}{12} \)

We consider the value of \( g'(7^{\frac{1}{3}}) \).