Solution

Let $f(i) = 120 - 10 \cdot (1+i)^{-1} - 20 \cdot (1+i)^{-2} - 30 \cdot (1+i)^{-3} - 40 \cdot (1+i)^{-4} - 50 \cdot (1+i)^{-5}$

$f'(i) = 10 \cdot (1+i)^{-2} + 40 \cdot (1+i)^{-3} + 90 \cdot (1+i)^{-4} + 160 \cdot (1+i)^{-5} + 250 \cdot (1+i)^{-6}$

Using Newton-Raphson method:

$$i_{n+1} = i_n - \frac{f(i_n)}{f'(i_n)}$$

We have $i_0 = 1$.

We want to find i_4

We can use a "Fraction" class in Python, then once we have i_4 we can add the numerator and the denominator together to get the flag.