HW 2

4

$f(x) = 27x^4 + 162x^3 - 180x^2 + 62x - 7$ $f'(x) = 110x^3 + 490x^2 - 360x + 62$

→ HAS ZERO @ $x = 1/3$

DO 11 ITERATIONS OF NEWT'S METHOD

DO $p_0 = 0.$

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

FROM PYTHON →

n	x_{n+1}	$\lvert x - x_{n+1} \rvert$
1	0.11	0.22
2	0.19	0.14
3	0.24	0.09
4	0.27	0.06
5	0.29	0.04
6	0.30	0.03
7	0.30	
8	0.31	

n	x_{n+1}
9	0.31
10	0.31

THE APPARENT ORDER OF CONVERGENCE IS QUADRATIC

A SEQUENCE GENERATED BY BISECTION METHOD WOULD CONVERGE LINEARLY, WHICH IS SLOWER