**10B Iterations**



1. Given that $f\left(x\right)=x^{2}-4x+1$
2. Show that the equation $f\left(x\right)=0$ can be written as $x=4-\frac{1}{x}$, $x\ne 0$.

The equation $f(x)$ has a root, $α$, in the interval $3<x<4$.

1. Use the iterative formula

 $x\_{n+1}=4-\frac{1}{x\_{n}}$, with $x\_{0}=3$ to find the value of $x\_{1}$, $x\_{2}$ and $x\_{3}$.

$$f\left(x\right)=x^{3}-3x^{2}-2x+5$$

1. Show that the equation $f\left(x\right)=0$ has a root in the interval $3<x<4$
2. Use the iterative formula:

$$x\_{n+1}=\sqrt{\frac{x\_{n}^{3}-2x\_{n}+5}{3}}$$

To calculate the values of $x\_{1}$, $x\_{2}$ and $x\_{3}$, giving answers to 4 decimal places, when:

i) $x\_{0}=1.5$ ii) $x\_{0}=4$