**10C Newton Raphson**





1. The diagram shows part of the curve with equation $y=f(x)$, where $f\left(x\right)=x^{3}+2x^{2}-5x-4$.

The point $A$, with x-coordinate $p$, is a stationary point on the curve.

The equation f(x)=0 has a root, $α$, in the interval $1.8<α<1.9$.

1. Explain why $x\_{0}=p$ is not suitable to use as a first approximation to $α$ when applying the Newton-Raphson method to $f(x)$



1. Using $x\_{0}=2$ as a first approximation to $α$, apply the Newton-Raphson method procedure twice to find a new approximation for $α$, to 3dp.
2. By considering the change of sign in $f(x)$ over an appropriate interval, show that your answer to part b is accurate to 3 decimal places