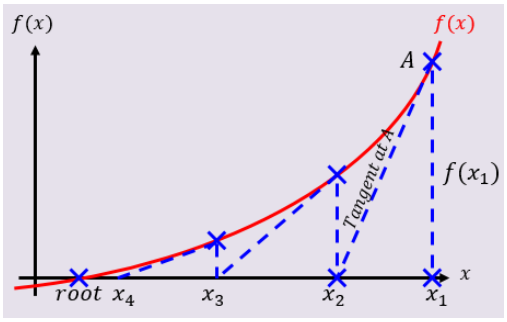
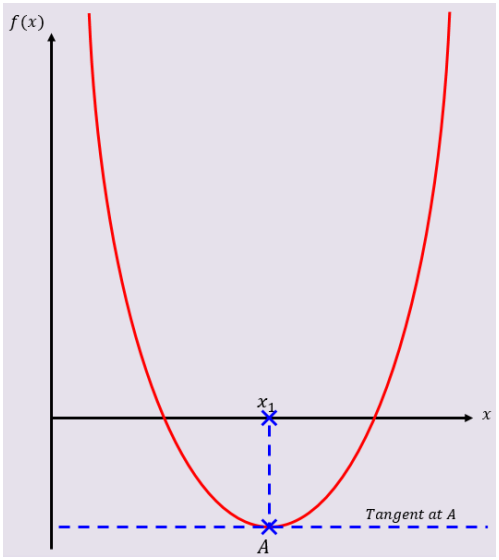
# 10C Newton Raphson



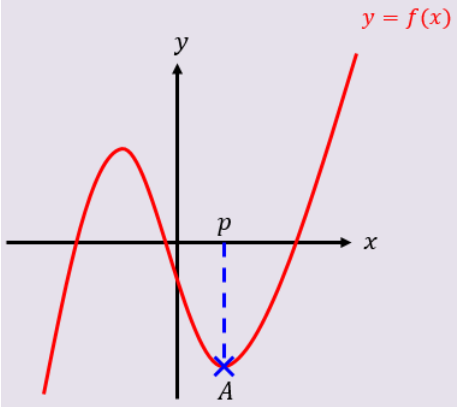



1. The diagram shows part of the curve with equation $y = f(x)$, where $f(x) = x^3 + 2x^2 - 5x - 4$.

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

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

a) Explain why $x_0 = p$ is not suitable to use as a first approximation to $\alpha$ when applying the Newton-Raphson method to $f(x)$




b) Using $x_0 = 2$ as a first approximation to $\alpha$, apply the Newton-Raphson method procedure twice to find a new approximation for $\alpha$, to 3dp.

c) 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