**First Principles Method**

1. Write $\frac{y\_{2}-y\_{1}}{x\_{2}-x\_{1}}$ using the coordinates $\left(x, x+h\right)$ etc.
2. Do the algebra on this and cancel all the $h$ terms as far as possible
3. Write “As $h\rightarrow 0$, $\frac{dy}{dx} \rightarrow $…” (and fill in the expression with $h=0$)
4. If given specific $x$ value then substitute this into your expression for $\frac{dy}{dx}$ and state gradient at this specific point

Questions to practise…

Find by first principles the gradient of these curves…

1. $y=x^{2}$
2. $y=x^{2}-4x+2$
3. $y=x^{4}$
4. $y=cosx$