## FOLLOWING THE INSTRUCTIONS IN CALCULUS OUESTIONS.

Make sure you do what the question asks for and nothing more!!! ANSWERS

1. Find the gradient of the function $y=x^{2}-8 x+3$ when $x=5$
$\operatorname{Grad} y^{\prime}=2 x-8$
Subs $x=5$
Grad $y^{\prime}=10-8=2$
2. Find the gradient of the function $y=x^{2}-8 x+3 a t(1,-4)$
$\operatorname{Grad} y^{\prime}=2 x-8$
Subs $x=1$ (note the fact that $y=-4$ is irrelevant)
Grad $y^{\prime}=2-8=-6$
3. Find the $x$ value when the gradient of $y=x^{2}-8 x+3$ equals 6

$$
\begin{aligned}
\text { Grad } y^{\prime}=2 x-8 & =6 \\
\text { So } 2 x \quad & =14 \\
x \quad & =7
\end{aligned}
$$

4. Find the coordinates of the point where the gradient of $y=x^{2}-8 x+3$ equals 2 .

$$
\begin{aligned}
\text { Grad } y^{\prime}=2 x-8 & =2 \\
\text { So } \quad 2 x & =10 \\
x \quad & =5 \text { and so } y=-12 \text {. The point is }(5,-12)
\end{aligned}
$$

5. Find the $x$ value when the gradient of $y=x^{2}-8 x+3$ equals 0

Grad $y^{\prime}=2 x-8=0$

$$
\text { So } \begin{aligned}
2 x & =8 \\
x & =4
\end{aligned}
$$

6. Find the coordinates of the point where the gradient of $y=x^{2}-8 x+3$ equals 0 .

$$
\begin{aligned}
\text { Grad } y^{\prime}=2 x-8 & =0 \\
\text { So } 2 x & =8 \\
x & =4 \text { and so } y=-13 . \text { The point is }(4,-13)
\end{aligned}
$$

7. Find the GRADIENT of the TANGENT to the curve $y=x^{2}-8 x+3$ at the point $(1,-4)$
Grad $y^{\prime}=2 x-8$
Subs $x=1 \quad$ (note the fact that $y=-4$ is irrelevant)
Grad $y^{\prime}=2-8=-6$
NOTE: the gradient at $x=1$ IS the gradient of the tangent at $x=1$
8. Find the EQUATION of the TANGENT to the curve $y=x^{2}-8 x+3$ at the point (1, -4)
Grad $y^{\prime}=2 x-8$ Subs $x=1$
Grad $y^{\prime}=2-8=-6$
The TANGENT is a line with equ like $y=m x+c$ where $m=-6$
Subs $x=1, y=-4 \quad-4=-6+\mathrm{c}$ so $\mathrm{c}=2$
Equation of tangent is $y=-6 x+2$
