|  |  |
| --- | --- |
| *Hence* | Use the previous part of the question to… |
| *intersection* | Solve the simultaneous equations |
| $$\frac{dy}{dx}$$ | Differentiate, find the gradient, |
| *rate of change* | , differentiate, find the gradient |
| *y is increasing*  |  is positive, >0. |
| *is a factor* | Put negative *x* value into and show no remainder |

|  |  |
| --- | --- |
| *Find the remainder when* | Put negative *x* value into and find remainder |
| *perpendicular* |  |
| $$y=mx+c$$ | Straight line, *m=* gradient ⇒ $\frac{dy}{dx}$ |
| $$\frac{d^{2}y}{dx^{2}}$$ | Gradient of gradient |
| *in the form* $\left(x+p\right)^{2}+q$ | Complete the square |
| *Determine the nature of the stationary point* | Put *x* value into  andif negative ⇒ maximum,if positive ⇒ minimum. |

|  |  |
| --- | --- |
| *Show that the stationary point is a maximum* | Put *x* value into  and show answer is negative. |
| *real roots* |  |
| *one root / repeated roots* |  |
| *no roots* |  |
| *the tangent to the curve at* $\left(x,y\right)$ | Find at *(x,y)*, then use *(x,y)* to find *c* and *y = mx+c*.  |
| *the normal to the curve (circle)* | Perpendicular of gradient (tangent) at specified point |