**Towards Excellence.**

1.



(a) Find algebraically, the intersection points of the graphs ***y = 8*** and ***y = -x + 6***

 ***x***

(b)(i) If ***y = -x + c*** is to be a tangent to ***y = 8*** find c

 *x*

 (ii) Explain fully why there are **two values for c**.

(c) Find all the values of c for which the line ***y = -x + c*** will cross the

 Hyperbola ***y = 8*** at exactly **two points.**

 ***x***

(d) Find all the values of c for which the line ***y = -x + c*** **will NOT cross** the

 Hyperbola ***y = 8*** at all.

 ***x***

2. The graph shown has the equation ***y = 6 + 6***

 ***x***

 If a line ***y = mx*** is to be a tangent to ***y = 6 + 6*** find ***m.***

 ***x***



3. The graph below has the equation ***y = -12 + 9***

 ***x***

 If a tangent has a gradient of 2, find the coordinates of the point where the tangent meets the ***x*** axis.



**Explain clearly why there are TWO answers!**