**EXCELLENCE PRACTICE.**



 P Q R

(a) Find the equation of the parabola.

(b) The line has a gradient of 1 and is a tangent to the parabola.

 The equation of the tangent is ***y = x + c where c is not yet known.***

 Find the value of ***c.***

(c) Point P is where the line crosses the ***x axis***.

 Point Q is at (3, 0)

 Find the distance PQ

**EXCELLENCE PRACTICE. ANSWERS**



 P O Q R

(a) Find the equation of the parabola.

 ***EQU is of the form*** ***y = -b(x – 5)2 + 6***

 ***Subs (3, 2) 2 = -b(3 – 5)2 + 6***

 ***-4 = -b(4)***

 ***b = 1***

***Equ is y = -(x – 5)2 + 6***

(b) The line has a gradient of 1 and is a tangent to the parabola.

 The equation of the tangent is ***y = x + c where c is not yet known.***

 Find the value of ***c.***

***Intersection is when x + c = -(x – 5)2 + 6***

 ***x + c = -( x2 – 10x + 25) + 6***

 ***x + c = -x2 + 10x – 19***

 ***x2 – 9x + (c + 19) = 0***

***The line is a tangent so = 0***

 ***92 – 4(c + 19) = 0***

 ***81 – 4c – 76 = 0***

 ***5 = 4c***

 ***5 = c***

 ***4***

***Tangent is y = x + 1.25***

(c) Point P is where the line crosses the ***x axis***.

 Point Q is at (3, 0)

 Find the distance PQ

 ***y = x + 1.25 crosses x axis when y = 0***

 ***0 = x + 1.25***

 ***So x = - 1.25***

***Distance PO = + 1.25 (cant have a negative distance!)***

 ***OQ = 3***

***So PQ = 4.25***