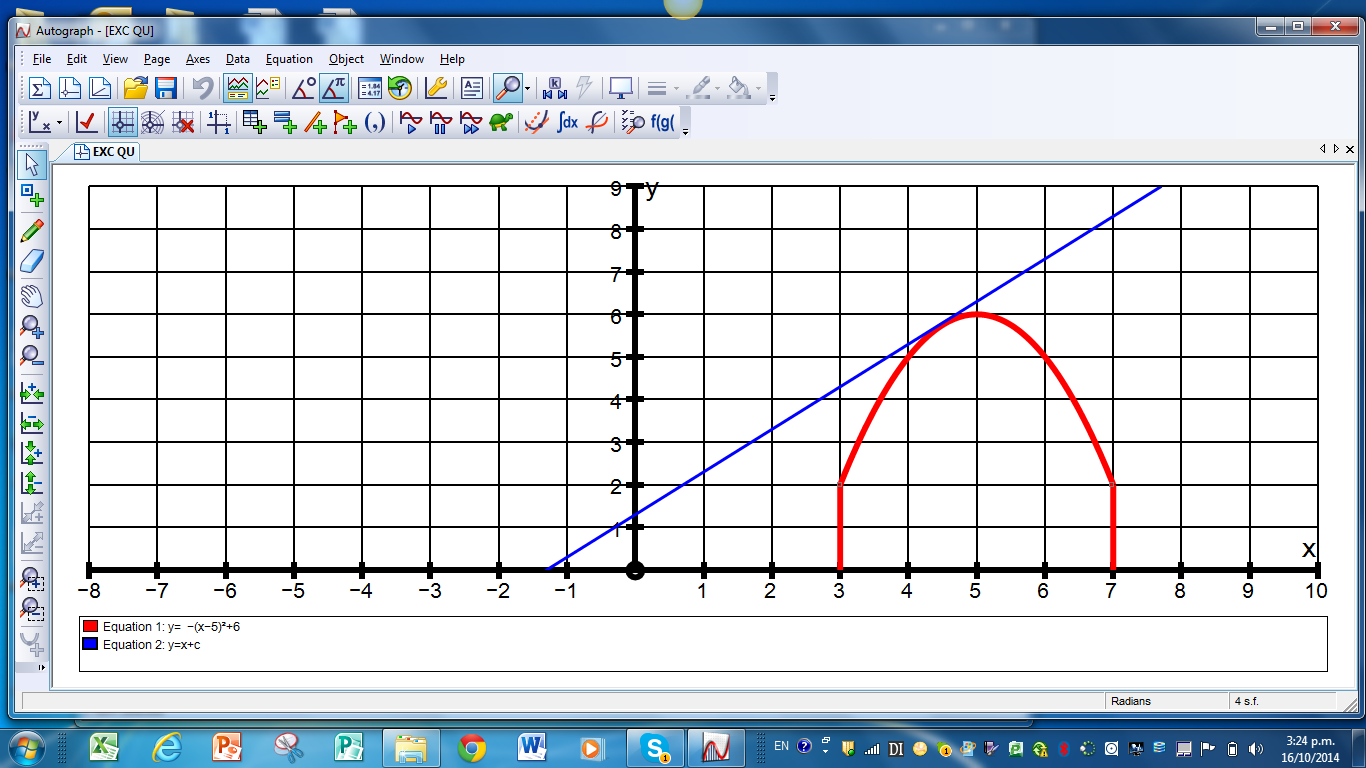
**EXCELLENCE PRACTICE.**



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.***

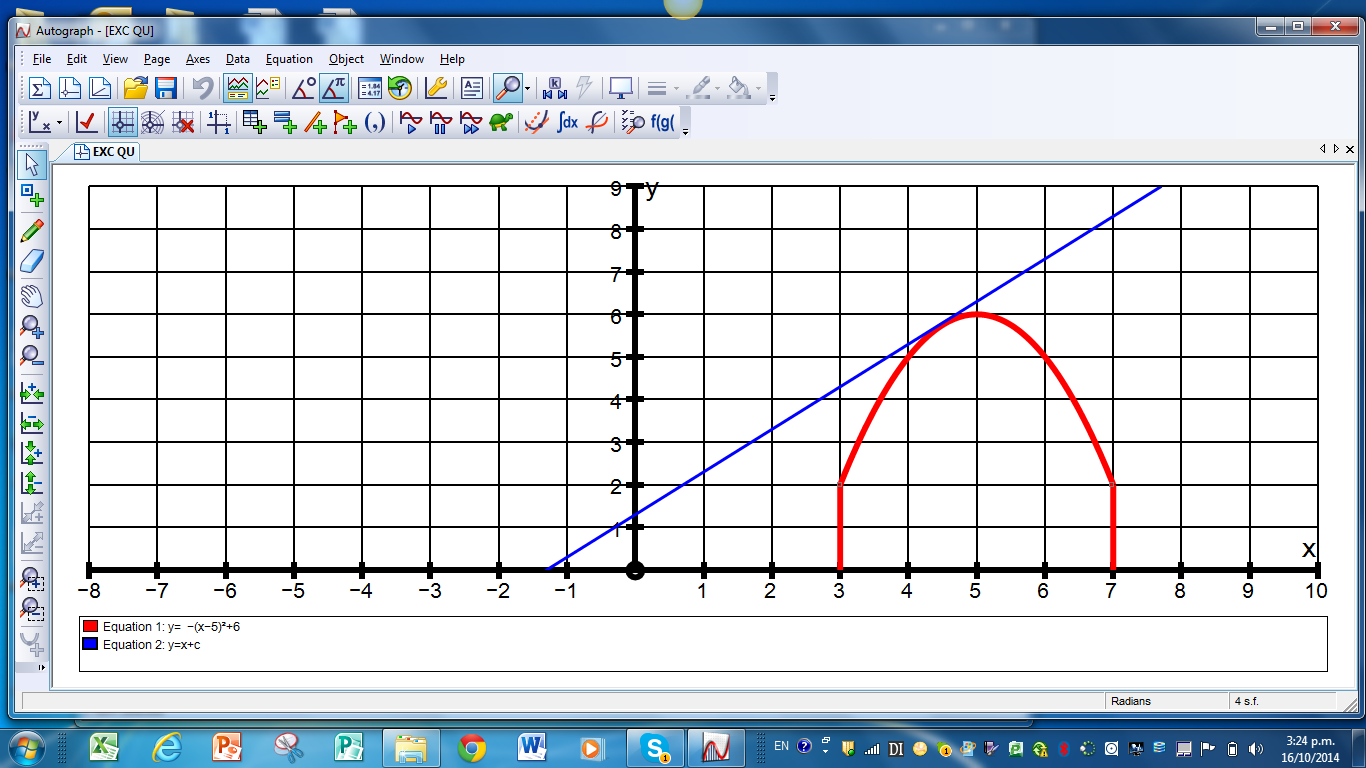
Find the value of ***c.***

(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***