**Lucan Community College Mathematics Department Mr Duffy**

6th Year - September 26 2012 – Coordinate Geometry of the Circle

**Finding the point of intersection of a line and a circle**

This example is taken from the 2006 Leaving Certificate Ordinary Level Paper 1

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**Q3. (b) Solve for x and y:**

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Step 1: Label both equations as (1) and (2)

...........(1) [always the ‘easier’ looking equation]

...........(2)

Step 2: Rewrite equation (1) so that x is on its own on the left hand side and all other ‘stuff’ is on the right hand side. Remember to change signs when travelling across the equals sign.



Step 3: We now have a new expression for x. Use this expression and substitute it for x into equation (2), i.e. rewrite equation (2) and wherever you see x, replace it with (**)

replace x with 10 + 2y

expand the bracket to be squared

set up multiplication of brackets

multiply out the brackets

bring same terms together and let = 0

simplify

divide all by 5

Step 4: Factorise our new expression to find values for y.

 0

Step 5: Notice that both brackets are the same, so we only have to let one of the brackets = 0 and solve to get our y-value

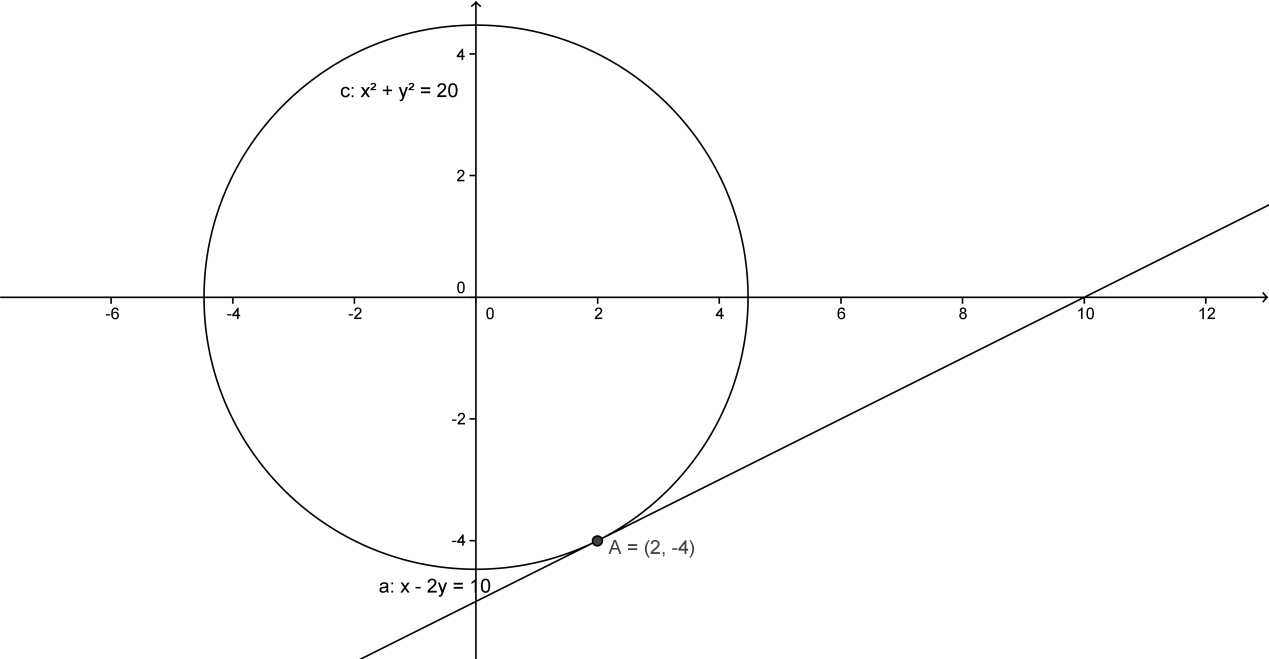
Step 6: Replace this value of y into equation (1) to find a corresponding value for x. We always replace it into the ‘easier’ looking equation.

So,  **and we know that**

So, the answer to our question is *x* = 2, *y* = -4.

This means that when we substitute *x* as -2 and *y* as -4 into both equations at the same time they both work out (they satisfy both equations simultaneously!)

A Graphical Representation of this scenario looks like this........



Scribble Box for Notes/Rough Work

Now try these questions in the spaces provided

**2004 LC OL Paper 1**

**Q3 (b) Solve for x and y **

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**2003 LC OL Paper 1**

**Q3. (b) (i) Solve for x and y**