**The Circle Formal Home Exercise 5**

**1.** Find the equations of the circles specified as follows: **Mark**

 *(a)* Centre (1,–4), radius 3. **1**

 *(b)* Passing through the points P(3,13) and Q(–2,1) and having PQ as diameter. **4**

**2.** State the centre and radius of each circle below:

 *(a) x*2 + *y*2 = 81 *(b) x*2 + *y*2 + 8*x* – 10*y* – 5 = 0 *(c)* 2*x*2 2*y*2 4*x* 3*y* $\frac{1}{2}$ ****

**3.** Show that *y* = –2*x* + 10 is a tangent to the circle *x*2 + *y*2 + 20*y* + 20 = 0. **5**

 Find the point of contact

**4.** Verify that the point P (3,4) lies on the circumference of the circle *x*2 + *y*2 + 2*x* – 4*y* – 15 = 0. **6**

 Find the equation of the tangent to the circle at P.

**5.** Explain why$x^{2}+ y^{2}+2x+3y+5=0$ does not represent a circle. **3**

**6.** Show that the following two circles touch externally at a single point **5**

 $x^{2}+y^{2}-10x-14y+54=0 $

$x^{2}+y^{2}-4x-2y=0$

**7.** A symmetrical logo design is based on **6**



 two circles. Relative to the axes shown,

 the equation of the larger circle is

 *x*2 + *y*2 – 20*x* – 24*y* + 195 = 0.

 Find the equation of the smaller circle.

 **= 34 marks**