Co-ordinate Geometry of the Circle

1 Centre (0,0) and radius r

1. What is the equation of a circle with:
   (a) Centre (0,0) and radius = 5
   (b) Centre (0,0) and radius = 4
   (c) Centre (0,0) and radius = 10
   (d) Centre (0,0) and radius = 2
   (e) Centre (0,0) and radius = $\sqrt{10}$
   (f) Centre (0,0) and radius = $\sqrt{2}$
   (g) Centre (0,0) and radius = $\sqrt{5}$
2. What is the centre and radius of the following circles?
   (a) $x^2 + y^2 = 25$
   (b) $x^2 + y^2 = 81$
   (c) $x^2 + y^2 = 169$
   (d) $x^2 + y^2 = 2$
   (e) $x^2 + y^2 = 20$
   (f) $x^2 + y^2 = 1$
3. Find the four co-ordinates, where each of the following circles cut the x-axis and the y-axis. Hence draw a rough sketch of each circle.
   (a) $x^2 + y^2 = 25$
   (b) $x^2 + y^2 = 81$
   (c) $x^2 + y^2 = 169$
4. Find the equation of a circle with:
   (a) Centre (2,3) and radius = 5
   (b) Centre (1,4) and radius = 4
   (c) Centre (-2,-1) and radius = 10
   (d) Centre (-3,3) and radius = 12
   (e) Centre (5,-6) and radius = $\sqrt{10}$
   (f) Centre (0,-3) and radius = $\sqrt{2}$

(g) Centre (2,0) and radius = $\sqrt{50}$

5. What is the centre and radius of the following circles?
   (a) $(x-2)^2 + (y-3)^2 = 100$
   (b) $(x-4)^2 + (y-1)^2 = 64$
   (c) $(x+3)^2 + (y+2)^2 = 25$
   (d) $(x+1)^2 + (y+7)^2 = 10$
   (e) $(x-5)^2 + (y+4)^2 = 81$
   (f) $(x+2)^2 + (y-2)^{=}49$
   (g) $x^2 + y^2 = 25$
   (h) $x^2 + (y-3)^2 = 16$
   (i) $(x+1)^2 + y^2 = 20$

6. Find the equation of the circle with:
   (a) Centre $(0,0)$ and containing the point (3,4)
   (b) Centre $(0,0)$ and containing the point (-5,12)
   (c) Centre $(3,2)$ and containing the point (-1,5)
   (d) Centre $(-7,-2)$ and containing the point (-1,6)
   (e) Centre $(0,-5)$ and containing the point (2,-1)

7. Find the coordinates of the points of intersection of the line and the circle:
   (a) Line: $x + y - 7 = 0$, Circle:$x^2 + y^2 = 5$
   (b) Line: $x + y - 5 = 0$, Circle:$x^2 + y^2 = 13$
   (c) Line: $x + y + 3 = 0$, Circle:$x^2 + y^2 = 65$
   (d) Line: $x - y - 2 = 0$, Circle:$x^2 + y^2 = 2$
   (e) Line: $x - 3y = 10$, Circle:$x^2 + y^2 = 10$