Equation of a Circle
Video 12 on Corbettmaths

Workout

Question 1: Write down the (i) centre and the (ii) radius for each of these circles.

(a) $(x - 3)^2 + (y - 2)^2 = 100$

(b) $(x - 1)^2 + (y + 3)^2 = 16$

(c) $(x + 5)^2 + (y - 7)^2 = 4$

(d) $(x + 6)^2 + (y + 8)^2 = 1$

(e) $x^2 + y^2 = 25$

(f) $(x + 4)^2 + y^2 = 9$

(g) $(x + 2)^2 + (y - 7)^2 = 5$

(h) $(x - 6)^2 + (y - 1)^2 = 20$

Question 2: Write the equations of each of these circles.

(a) Centre is (2, 7) and has a radius of 6.

(b) Centre is (4, −2) and has a radius of 3.

(c) Centre is (−1, 3) and has a radius of 4.

(d) Centre is (−1, −2) and has a radius of 9.

(e) Centre is (0, 5) and has a radius of 5.

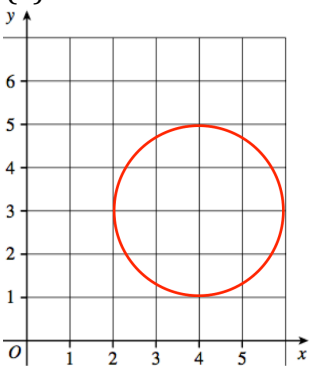
(f) Centre is the origin and has radius 8.

(g) Centre is (11, 0) and has a radius of $\sqrt{3}$.

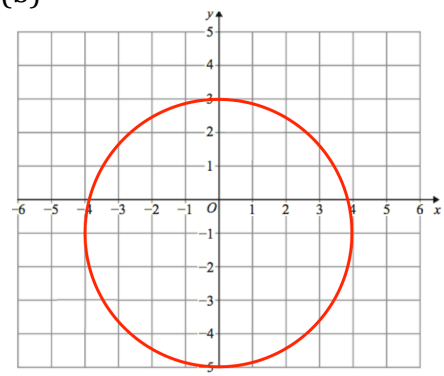
(h) Centre is (−3, −7) and has a radius of $2\sqrt{2}$.

Question 3: Write the equations of each of these circles.

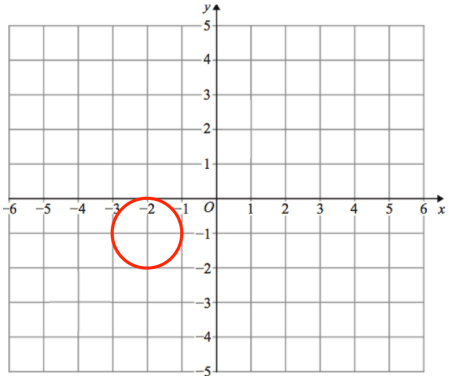
(a)



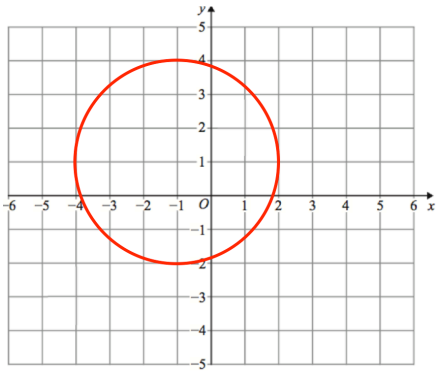
(b)



(c)



(d)



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Question 4: Find if the coordinates given lie on the circles below:

(a) Does (4, 2) lie on the circle with equation $(x - 1)^2 + (y + 2)^2 = 25$

(b) Does (3, 9) lie on the circle with equation $(x - 4)^2 + (y - 3)^2 = 36$

(c) Does (− 16, 4) lie on the circle with equation $(x + 4)^2 + (y - 9)^2 = 169$

(d) Does (2, −2) lie on the circle with radius 8 and centre (5, 5)?

(e) Does (0, 7) lie on the circle with radius $\sqrt{10}$ and centre (−3, 8)?

Question 5: Find where the circle $(x - 3)^2 + (y - 5)^2 = 106$ meets the x-axis.

Question 6: Find where the circle $(x - 1)^2 + (y + 2)^2 = 20$ meets the x-axis.

Question 7: Find where the circle $(x + 2)^2 + (y + 3)^2 = 45$ meets the x-axis.

Question 8: Find where the circle $(x - 2)^2 + (y - 1)^2 = 68$ meets the x-axis.

Question 9: Find where the circle $(x - 4)^2 + (y - 6)^2 = 32$ meets the x-axis.

Apply

Question 1: A circle has centre (7, 2).
The point (1, −6) lies on the circle.
Find the equation of the circle.

Question 2: A circle has centre A.
The points C (0, 4) and D (10, 4) lie on the diameter of the circle.

(a) Find the coordinates of A.
(b) Find the equation of the circle.