

Revision Exercise (Circles)

1.

a) $x^2 + y^2 = 9$

c) $x^2 + y^2 = 5$

e) $x^2 + y^2 = \frac{1}{2}$

b) $x^2 + y^2 = 16$

d) $x^2 + y^2 = 18$

f) $x^2 + y^2 = \frac{9}{3+2\sqrt{2}}$

2.

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

e) (i) $x^2 + (y + 10)^2 = 1$

b) (i) $(x - 2)^2 + (y - 1)^2 = 9$

f) (i) $(x - 5)^2 + (y - 6)^2 = 100$

c) (i) $(x + 3)^2 + y^2 = 25$

g) (i) $(x - 7)^2 + y^2 = 36$

d) (i) $(x - 4)^2 + (y + 5)^2 = 4$

h) (i) $(x - 1.5)^2 + (y - 3.5)^2 = 2.25$

2.

a) (ii) $x^2 + y^2 - 2x - 6y - 6 = 0$

e) (ii) $x^2 + y^2 + 20y + 99 = 0$

b) (ii) $x^2 + y^2 - 4x - 2y - 4 = 0$

f) (ii) $x^2 + y^2 - 10x - 12y - 39 = 0$

c) (ii) $x^2 + y^2 + 6x - 16 = 0$

g) (ii) $x^2 + y^2 - 14x + 13 = 0$

d) (ii) $x^2 + y^2 - 8x + 10y + 37 = 0$

h) (ii) $x^2 + y^2 - 3x - 7y + \frac{49}{4} = 0$

3.

a) Centre: $(0, 0)$; Radius: 9 units

d) Centre: $(1, -2)$; Radius: 6 units

b) Centre: $(1, 0)$; Radius: 3 units

e) Centre: $(3, 10)$; Radius: 4 units

c) Centre: $(0, -4)$; Radius: 5 units

f) Centre: $(\frac{3}{2}, 1)$; Radius: 8 units

4.

a) Centre: $(2, 3)$; Radius: 5 units

f) Centre: $(-1, 5)$; Radius: 6 units

b) Centre: $(-1, 2)$; Radius: 3 units

g) Centre: $(-3, 0)$; Radius: 4 units

c) Centre: $(5, -7)$; Radius: 1 units

h) Centre: $(-4, 3)$; Radius: 5 units

d) Centre: $(-5, -7)$; Radius: 2 units

i) Centre: $(0, \frac{5}{2})$; Radius: $\frac{3}{2}$ units

e) Centre: $(1, -2)$; Radius: 3 units

j) Centre: $(2, 0)$; Radius: 2 units

5.

a) $(x + 5)^2 + (y - 12)^2 = 37$

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

b) $(x - 2)^2 + (y - 2)^2 = 8$

d) $(x - 5)^2 + (y - 7)^2 = 169$

e) $(x + 9)^2 + (y + 1)^2 = 4$

f) $(x - 7)^2 + (y + 4)^2 = 9$

g) $(x - 14)^2 + (y - 2)^2 = 20$

h) $(x + 4)^2 + (y - 4)^2 = 52$

6.

a) (i) $y = \frac{3}{4}x - \frac{7}{2}$

b) (i) $y = x$

c) (i) $y = \frac{4}{3}x - \frac{2}{3}$

d) (i) $y = -x + 7$

e) (i) $y = \frac{4}{3}x + \frac{17}{3}$

f) (i) $y = x$

g) (i) $y = -x - 10$

h) (i) $y = \frac{4}{3}x - \frac{64}{3}$

6.

a) (ii) $y = -\frac{4}{3}x + 9$

b) (ii) $y = -x + 8$

c) (ii) $y = -\frac{3}{4}x + \frac{7}{2}$

d) (ii) $y = x + 1$

e) (ii) $y = -\frac{3}{4}x + \frac{3}{2}$

f) (ii) $y = -x - 4$

g) (ii) $y = x + 10$

h) (ii) $y = -\frac{3}{4}x - \frac{1}{2}$

7.

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

b) $(x - 10)^2 + (y - 2)^2 = 20$

c) $(x - 10)^2 + (y - 4)^2 = 40$

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

e) $(x - 2)^2 + (y + 4)^2 = 20$

f) $(x + 2)^2 + (y + 4)^2 = 68$

g) $(x + 6)^2 + (y - 4)^2 = 32$

h) $(x + 6)^2 + (y + 8)^2 = 20$

8.

a) (i) $(x - 1)^2 + (y - 2)^2 = 25$

b) (i) $(x - 2)^2 + (y - 4)^2 = 16$

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

d) (i) $x^2 + (y - 1)^2 = 9$

e) (i) $(x + 4)^2 + y^2 = 10$

f) (i) $(x - 5)^2 + (y + 11)^2 = 64$

g) (i) $(x - 6)^2 + (y + 7)^2 = 49$

h) (i) $(x - 2)^2 + (y - 6)^2 = \frac{9}{4}$

i) (i) $(x - \frac{1}{4})^2 + (y + \frac{1}{4})^2 = 9$

j) (i) $(x - \frac{1}{2})^2 + (y - \frac{1}{2})^2 = 4$

8.

a) (ii) Centre: $(1, 2)$; Radius: 5 units

b) (ii) Centre: $(2, 4)$; Radius: 4 units

c) (ii) Centre: $(3, 3)$; Radius: 10 units

d) (ii) Centre: $(0, 1)$; Radius: 3 units

e) (ii) Centre: $(-4, 0)$; Radius: $\sqrt{10}$ units

f) (ii) Centre: $(5, -11)$; Radius: 8 units

g) (ii) Centre: $(6, -7)$; Radius: 7 units

h) (ii) Centre: $(2, 6)$; Radius: $\frac{3}{2}$ units

i) (ii) Centre: $(\frac{1}{4}, -\frac{1}{4})$; Radius: 3 units

j) (ii) Centre: $(\frac{1}{2}, \frac{1}{2})$; Radius: 2 units

9.

$$A = (0, 2); B = (8, 10).$$

$$\text{Midpoint of AB} = \text{Centre of circle} = (4, 6).$$

\therefore AB is a diameter of the circle.

10.

$$(i) P = (10, 8) \qquad (ii) 4\sqrt{5} \text{ units}$$