

QUADRATIC (+ OTHER) GRAPHS

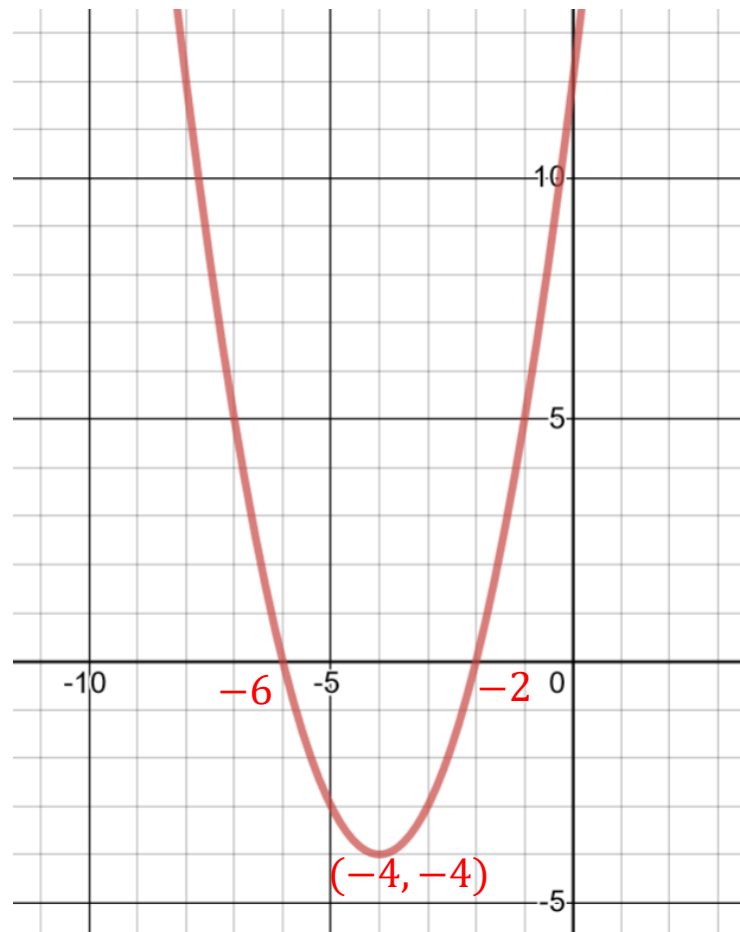
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Worked example

Sketch $y = x^2 + 6x + 8$, labelling the intercepts with the axes and the turning points.

Your turn

Sketch $y = x^2 + 8x + 12$, labelling the intercepts with the axes and the turning points.

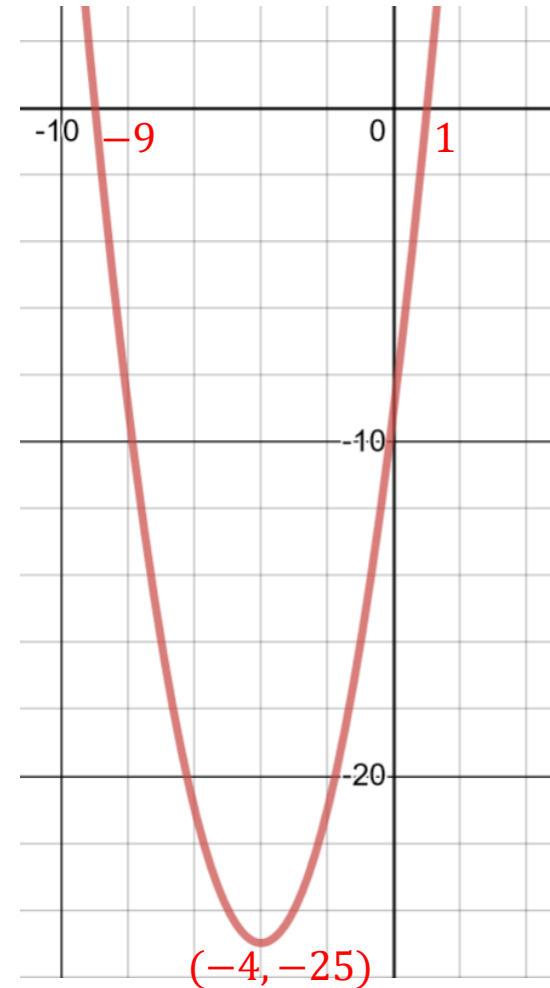


Worked example

Sketch $y = x^2 + 6x - 7$, labelling the intercepts with the axes and the turning points.

Your turn

Sketch $y = x^2 + 8x - 9$, labelling the intercepts with the axes and the turning points.

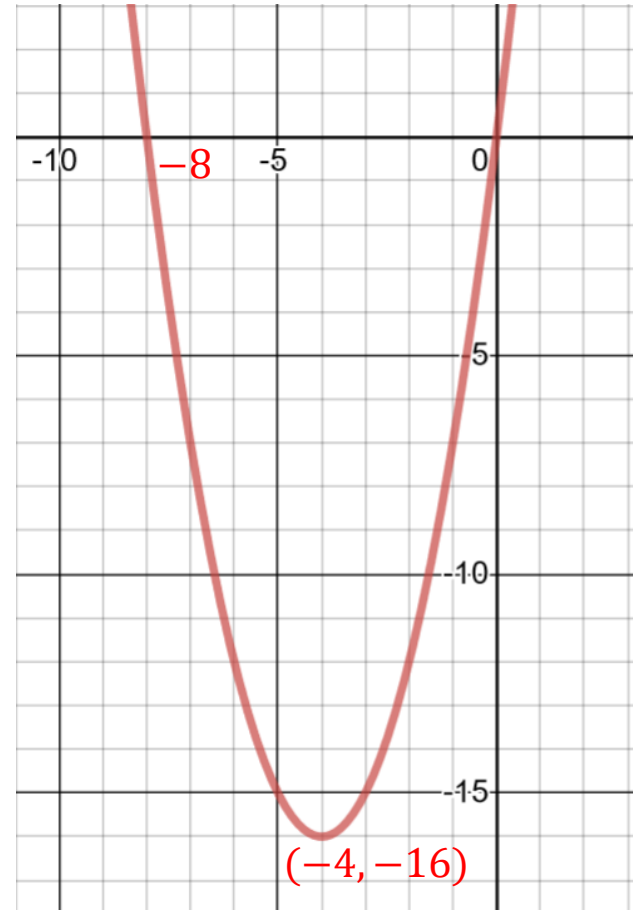


Worked example

Sketch $y = x^2 + 6x$, labelling the intercepts with the axes and the turning points.

Your turn

Sketch $y = x^2 + 8x$, labelling the intercepts with the axes and the turning points.

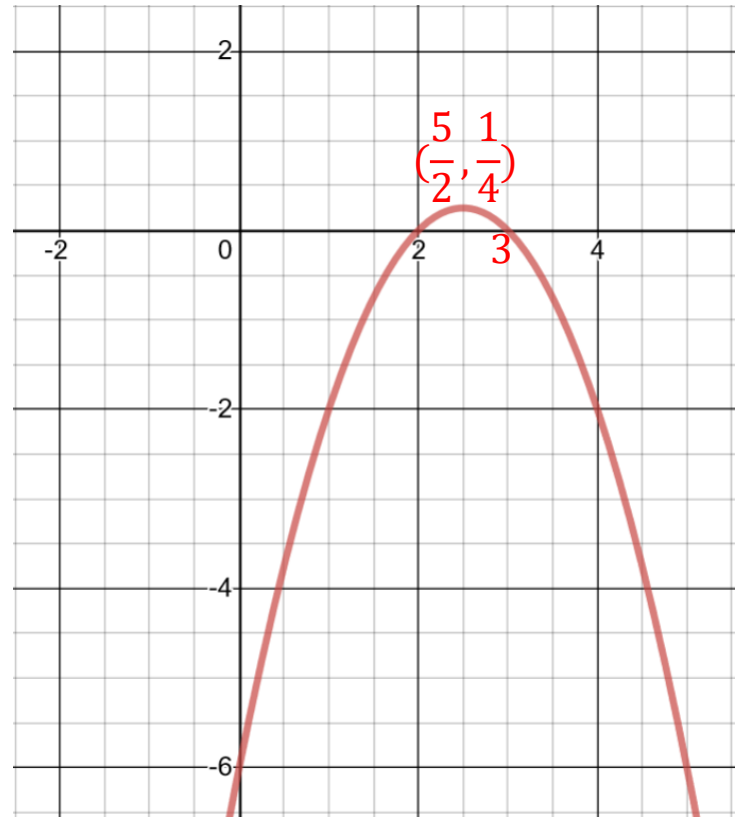


Worked example

Sketch $y = -x^2 + 3x - 2$,
labelling the intercepts with the
axes and the turning points.

Your turn

Sketch $y = -x^2 + 5x - 6$,
labelling the intercepts with the
axes and the turning points.



Worked example

Sketch $y = x^2 + 2x - 15$

Shape:

y -intercept:

x -intercept(s):

Turning point:

Your turn

Sketch $y = x^2 + 6x - 16$

Shape: U

y -intercept: -16

x -intercept(s): $-8, 2$

Turning point: $(-3, -25)$

Worked example

Sketch $y = 2x^2 + 5x - 3$

Shape:

y -intercept:

x -intercept(s):

Turning point:

Your turn

Sketch $y = 2x^2 + 9x - 5$

Shape: U

y -intercept: -5

x -intercept(s): $-5, \frac{1}{2}$

Turning point: $(-\frac{9}{4}, -\frac{121}{8})$

Worked example

Sketch $y = 3x^2 - x + 2$

Shape:

y -intercept:

x -intercept(s):

Turning point:

Your turn

Sketch $y = 2x^2 - x - 3$

Shape: U

y -intercept: -3

x -intercept(s): $-1, \frac{3}{2}$

Turning point: $(\frac{1}{4}, -\frac{25}{8})$

Worked example

Sketch $y = -x^2 + 3x - 2$

Shape:

y -intercept:

x -intercept(s):

Turning point:

Your turn

Sketch $y = -x^2 + 5x - 6$

Shape: $\cap$

y -intercept: -6

x -intercept(s): $2, 3$

Turning point: $(\frac{5}{2}, \frac{1}{4})$

Worked example

Find the coordinates of the turning point of:

$$y = x^2 + 6x - 5$$

$$y = x^2 - 8x + 3$$

Your turn

Find the coordinates of the turning point of:

$$y = x^2 + 8x - 2$$

$$(-4, -18)$$

Worked example

Find the coordinates of the turning point of:

$$y = 2x^2 + 6x - 5$$

$$y = 2x^2 - 8x + 3$$

Your turn

Find the coordinates of the turning point of:

$$y = 2x^2 + 10x - 3$$

$$\left(-\frac{5}{2}, -\frac{31}{2}\right)$$

Worked example

Plot the graph $y = 5x^2 - 2x + 1$
for $-3 \leq x \leq 3$

x	-3	-2	-1	0	1	2	3
y							

Your turn

Plot the graph $y = 3x^2 - 4x + 2$
for $-3 \leq x \leq 3$

x	-3	-2	-1	0	1	2	3
y	41	22	9	2	1	6	17

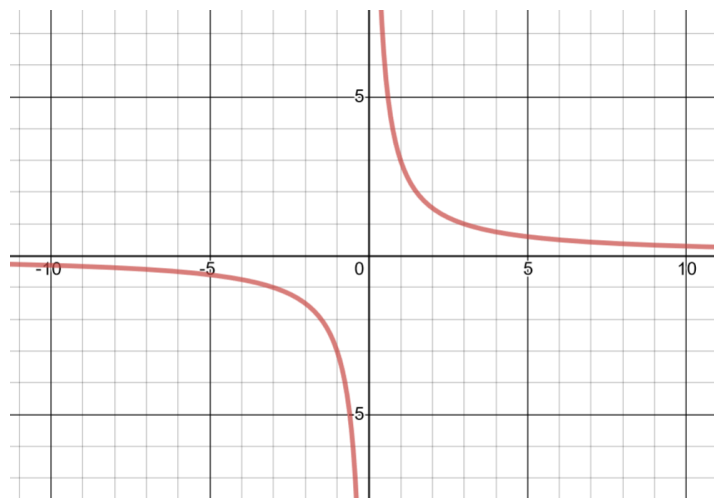
Worked example

Sketch the graph of $y = \frac{a}{x}$, $a > 0$

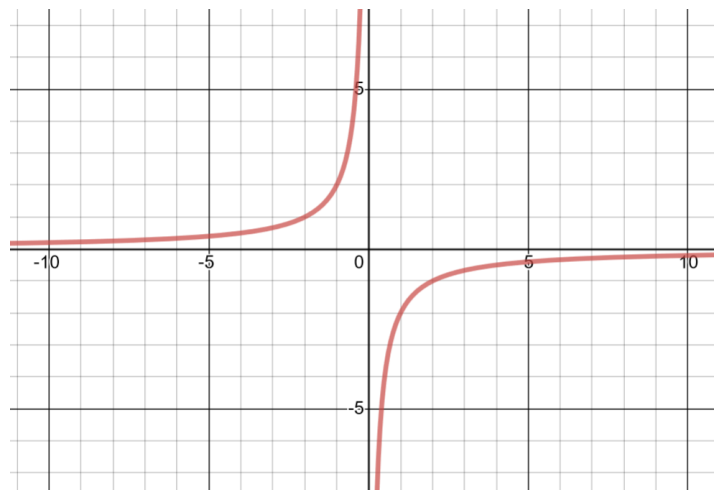
Sketch the graph of $y = \frac{a}{x}$, $a < 0$

Your turn

Sketch the graph of $y = \frac{3}{x}$



Sketch the graph of $y = \frac{-2}{x}$



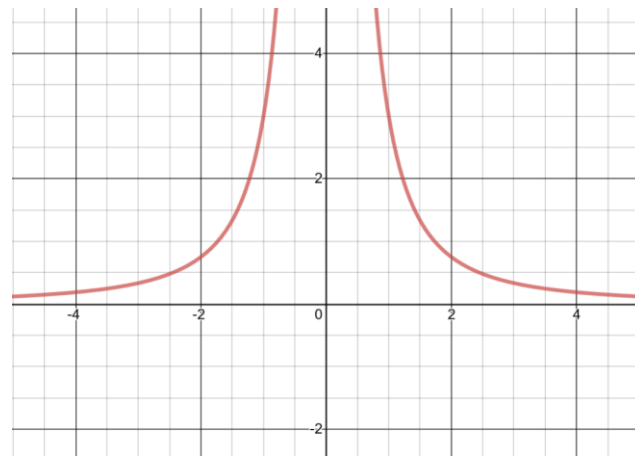
Worked example

Sketch the graph of $y = \frac{a}{x^2}, a > 0$

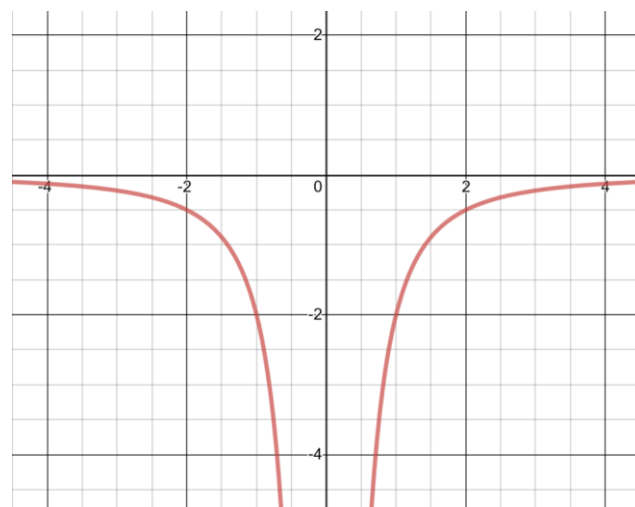
Sketch the graph of $y = \frac{a}{x^2}, a < 0$

Your turn

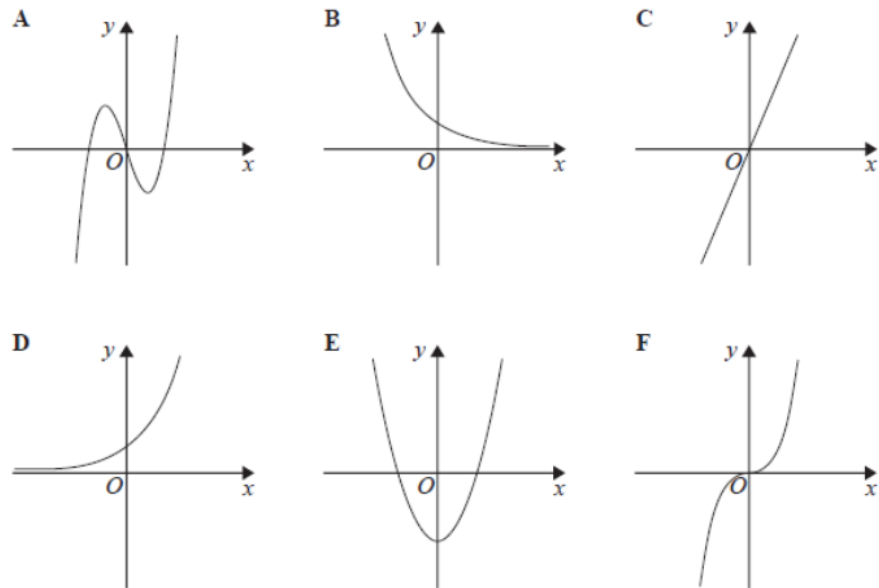
Sketch the graph of $y = \frac{3}{x^2}$



Sketch the graph of $y = \frac{-2}{x^2}$



Worked example



$$y = x^2 - 5$$

$$y = x^3 - 3x$$

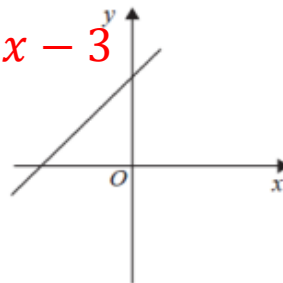
$$y = 3^x$$

$$y = 3x$$

Your turn

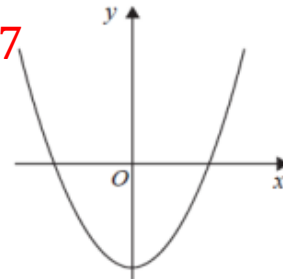
$$y = 2x - 3$$

Graph A



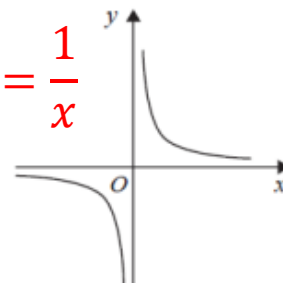
$$y = x^2 - 7$$

Graph B



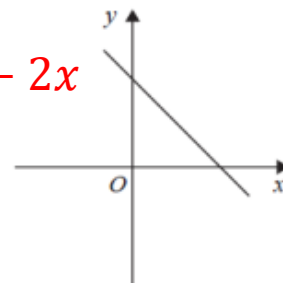
$$y = \frac{1}{x}$$

Graph C



$$y = 3 - 2x$$

Graph D



$$y = x^2 - 7$$

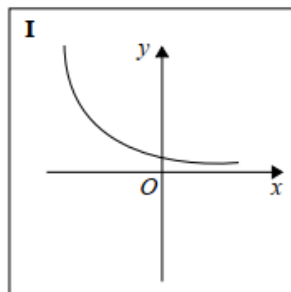
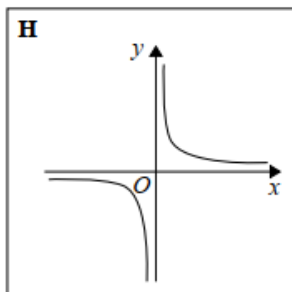
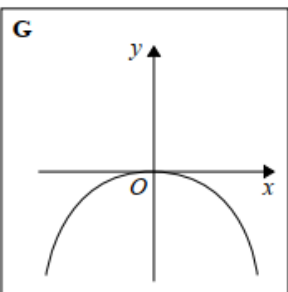
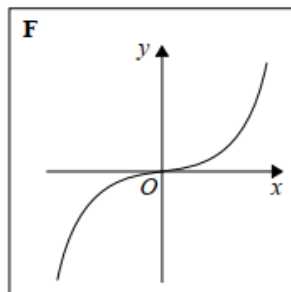
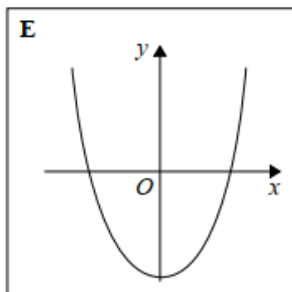
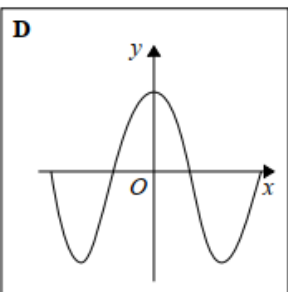
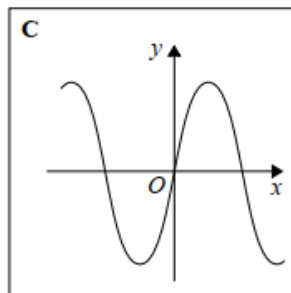
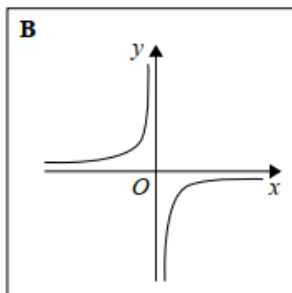
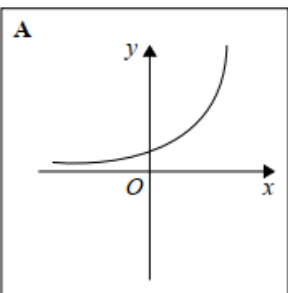
$$y = 3 - 2x$$

$$y = 2x + 3$$

$$y = \frac{1}{x}$$

Worked example

Your turn



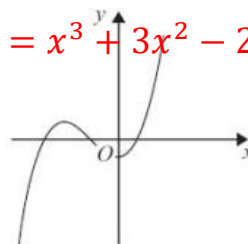
$$y = \sin x$$

$$y = x^3 + 4x$$

$$y = 2^x$$

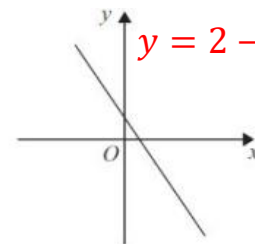
$$y = \frac{4}{x}$$

$$y = x^3 + 3x^2 - 2$$

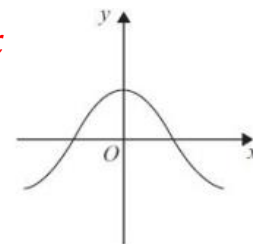


Graph A

$$y = 2 - 3x$$

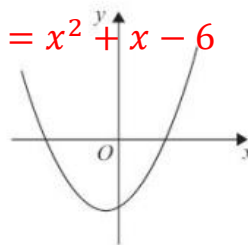


Graph B



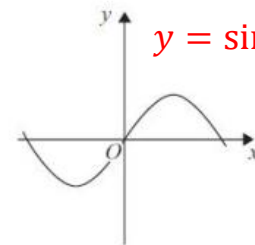
Graph C

$$y = x^2 + x - 6$$

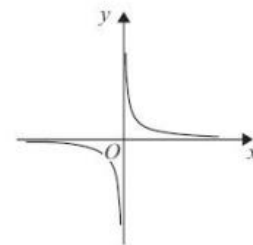


Graph D

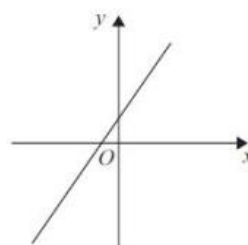
$$y = \sin x$$



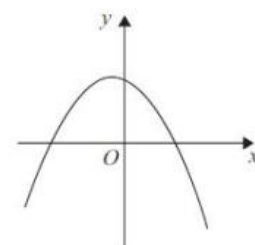
Graph E



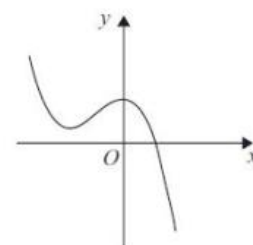
Graph F



Graph G



Graph H



Graph I

$$y = \sin x$$

$$y = 2 - 3x$$

$$y = x^2 + x - 6$$

$$y = x^3 + 3x^2 - 2$$

Worked example

Sketch $y = pq^x$. The curve passes through the points (2, 45) and (4, 405). Calculate the value of p and the value of q

Your turn

Sketch $y = pq^x$. The curve passes through the points (1, 5) and (4, 320). Calculate the value of p and the value of q

$$p = \frac{5}{4}, q = 4$$

Worked example

A circle has centre at the origin, and radius 3. Write the equation of the circle

A circle has centre $(0, 0)$, and radius 4. Write the equation of the circle

Your turn

A circle has centre at the origin, and radius 5. Write the equation of the circle

$$x^2 + y^2 = 25$$