Circle

- **CENTRE-RADIUS FORM**

  Equation of circle with centre (h, k) & radius r is given by,
  $$(x-h)^2 + (y-k)^2 = r^2$$

- ## General equation of a circle is $x^2+y^2+2gx+2fy+c=0$

  Centre of the circle = (-g,-f)
  Radius of the circle is $\sqrt{g^2 + f^2 - c}$

Parabola

		$y^2 = 4ax$	$y^2 = -4ax$	$x^2 = 4ay$	$x^2 = -4ay$
(i)	Vertex	(0, 0)	(0, 0)	(0, 0)	(0, 0)
(ii)	Focus	(a, 0)	(-a, 0)	(0, a)	(0, -a)
(iii)	Equation of **Directrix**	x = -a	x = a	y = -a	y = a
(iv)	Equation of axis	y = 0	y = 0	x = 0	x = 0

Ellipse

Equation	$\dfrac{x^2}{a^2}+\dfrac{y^2}{b^2}=1\ ;a>b$	$\dfrac{x^2}{a^2}+\dfrac{y^2}{b^2}=1\ ;a<b$
Equation of Major axis	y = 0	x = 0
Length of Major axis	2a	2b
Equation of Minor axis	x = 0	y = 0
Length of Minor axis	2 b	2 b
Vertices	$(\pm a, 0)$	$(0, \pm b)$
Foci	$(\pm ae, 0)$	$(0, \pm be)$
Directrix	$x = \pm\dfrac{a}{e}$	$y = \pm\dfrac{b}{e}$
Eccentricity	$e=\sqrt{1-\dfrac{b^2}{a^2}}$	$e=\sqrt{1-\dfrac{a^2}{b^2}}$
Length of a Latus-rectum	$\dfrac{2b^2}{a}$	$\dfrac{2a^2}{b}$
Centre	(0, 0)	(0, 0)

Hyperbola

Equation	Hyperbola $\dfrac{x^2}{a^2} - \dfrac{y^2}{b^2} = 1$	Conjugate Hyperbola $-\dfrac{x^2}{a^2} + \dfrac{y^2}{b^2} = 1$
Equation of Transverse axis	$y = 0$	$x = 0$
Length of Transverse axis	$2a$	$2b$
Equation of Conjugate axis	$x = 0$	$y = 0$
Length of Conjugate axis	$2b$	$2a$
Vertices	$(\pm a, 0)$	$(0, \pm b)$
Foci	$(\pm ae, 0)$	$(0, \pm be)$
Directrix	$x = \pm \dfrac{a}{e}$	$y = \pm \dfrac{b}{e}$
Centre	$(0, 0)$	$(0, 0)$
Eccentricity	$e = \sqrt{\dfrac{a^2 + b^2}{a^2}}$	$e = \sqrt{\dfrac{b^2 + a^2}{b^2}}$
Length of a Latus–rectum	$\dfrac{2b^2}{a}$	$\dfrac{2a^2}{b}$