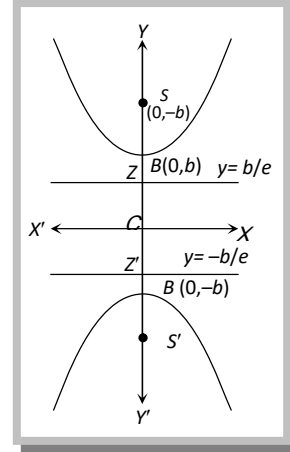


Conjugate Hyperbola.

The hyperbola whose transverse and conjugate axis are respectively the conjugate and transverse axis of a given hyperbola is called conjugate hyperbola of the given hyperbola.

Hyperbola Fundamentals	$\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$	$-\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ or $\frac{x^2}{a^2} - \frac{y^2}{b^2} = -1$
Centre	(0, 0)	(0, 0)
Length of transverse axis	2a	2b
Length of conjugate axis	2b	2a
Foci	(±ae, 0)	(0, ±be)
Equation of directrices	$x = \pm a / e$	$y = \pm b / e$
Eccentricity	$e = \sqrt{\left(\frac{a^2 + b^2}{a^2}\right)}$	$e = \sqrt{\left(\frac{a^2 + b^2}{b^2}\right)}$
Length of latus rectum	$\frac{2b^2}{a}$	$\frac{2a^2}{b}$
Parametric co-ordinates	$(a \sec \phi, b \tan \phi), 0 \leq \phi < 2\pi$	$(b \sec \phi, a \tan \phi), 0 \leq \phi < 2\pi$
Focal radii	$SP = ex_1 - a$ & $S'P = ex_1 + a$	$SP = ey_1 - b$ & $S'P = ey_1 + b$
Difference of focal radii (S'P - SP)	2a	2b
Tangents at the vertices	$x = -a, x = a$	$y = -b, y = b$
Equation of the transverse axis	$y = 0$	$x = 0$
Equation of the conjugate axis	$x = 0$	$y = 0$



Note: If e and e' are the eccentricities of a hyperbola and its conjugate, then $\frac{1}{e^2} + \frac{1}{e'^2} = 1$.

The foci of a hyperbola and its conjugate are concyclic.