

Special form of Hyperbola.

If the center of hyperbola is (h, k) and axes are parallel to the co-ordinate axes, then its equation is $\frac{(x-h)^2}{a^2} - \frac{(y-k)^2}{b^2} = 1$. By shifting the origin at (h, k) without rotating the co-ordinate axes, the above equation reduces to $\frac{X^2}{a^2} - \frac{Y^2}{b^2} = 1$, where $x = X + h, y = Y + k$.