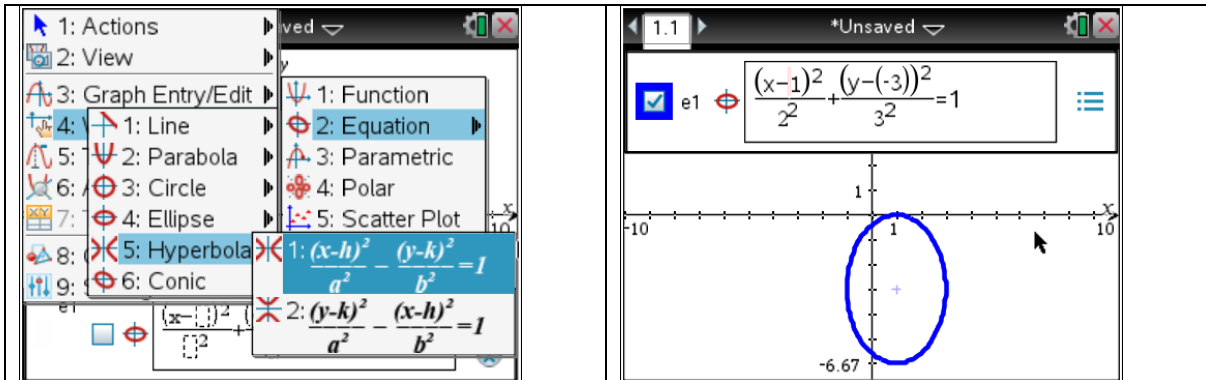


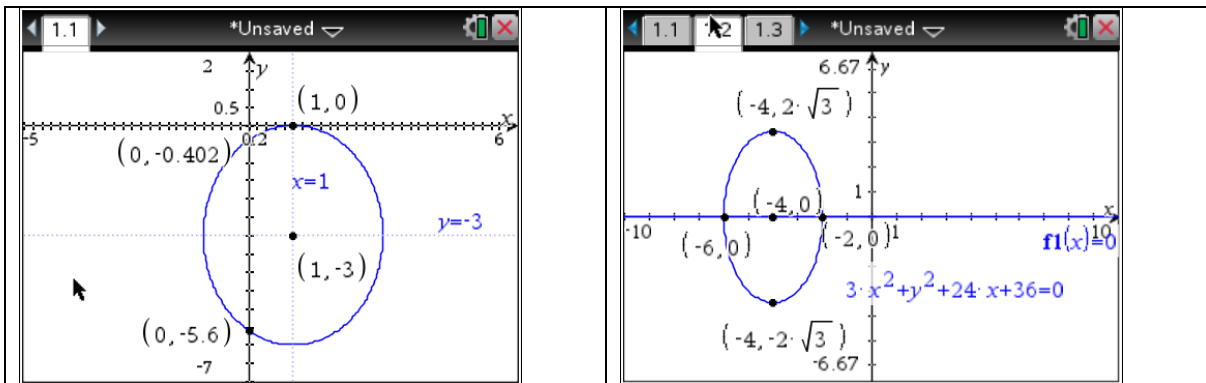
### SM Unit 3 Ellipses and Hyperbolas TI Nspire CAS OS 3.9

We can enter equations of ellipses and hyperbolas in two different ways:

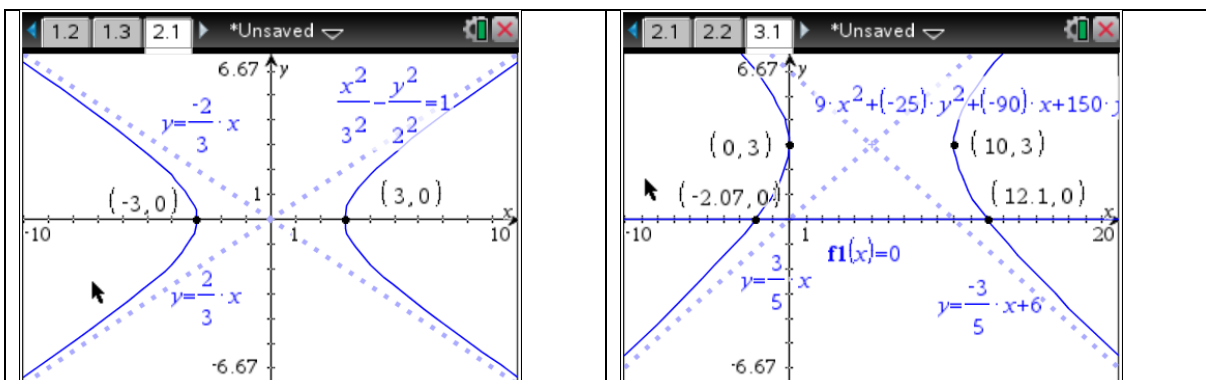
Change Graph Entry 2: Equation to 4: Ellipse or 5: Hyperbola and enter equation in standard form. Alternatively, select 6: Conic and enter the general equation.



Use Geometry, Points and Lines, Intersection points to find axes intercepts:



For a hyperbola in Analyze Conics select Asymptotes and Vertices.



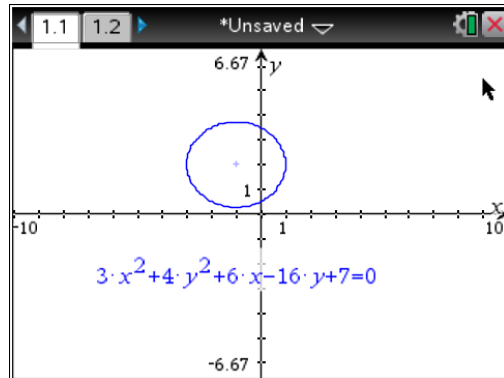
Using the general form of a conic:

$$9x^2 - 25y^2 - 90x + 150y = 225$$

We can deduce the standard form from the information in the screen. From the vertices we know that  $a = 5$ . From the equations of the asymptotes  $b = 3$ . Asymptotes intersect at the point  $(5, 3)$  which gives us the centre.

So in standard form the equation of the hyperbola is  $\frac{(x-5)^2}{25} - \frac{(y-3)^2}{9} = 1$

We can also use the defined equation as follows:



And then find axes intercepts in the calculator screen:

