**3C Eccentricity**

Ellipse

Parabola

Hyperbola

1. Show that for , the ellipse with focus and directrix has equation .
2. Find foci of the ellipse with equation and give the equation of the directrices. Hence sketch the ellipse.

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1. If is a point on an ellipse , prove that

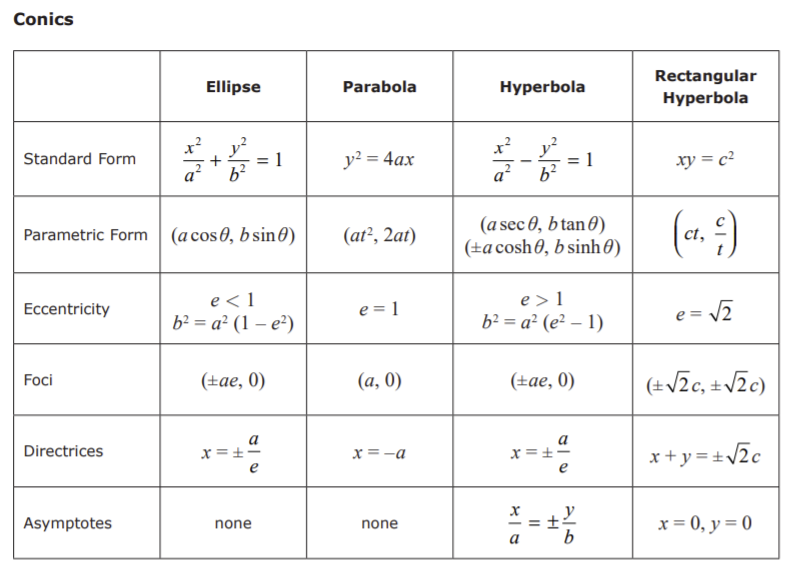
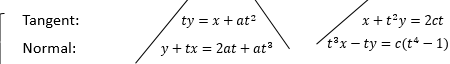
1. Show that for , the hyperbola with foci at and directrices at has equation

1. Sketch the hyperbola with equation , indicating the foci, directrices and equations of the asymptotes.
2. Sketch the hyperbola with equation , indicating the foci, directrices and equations of the asymptotes.

A quick note on hyperbolas and ellipses:

For hyperbolas, you don’t care which of and are bigger. For ellipses, swapping the and has the effect of rotating the ellipse and hence the foci/directrices too. We don’t get this same rotation for hyperbolas.

Formula book p19



Note: