Conic Tips

<u>Parabola</u>

- x^2 term; it opens up/down (interpret with '*p*')
- y^2 term; it opens left/right (interpret with '*p*')
- Focus always inside the parabola
- '*p*' is the same distance from vertex to focus and vertex to directrix

<u>Ellipse</u>

- *a>b*
- opens in the direction '*a*' is underneath; underneath '*x*,' opens left/right; underneath '*y*' opens up and down
- *a* corresponds to the major axis & vertices
- *b* corresponds to minor axis& co-vertices
- *c* corresponds with length from center to fo**C**i
- If trying to determine if it's a circle or ellipse, *a≠b*

<u>Hyperbola</u>

- '– ' sign the difference with hyperbola and ellipse
- Always '*a*' first then '*b*' (*a>b is for Ellipse only!*)
- If *x* first, then opens left/right '*a*' units
- If *y* first, then opens up/down '*a*' units
- Use '*a*' and '*b*' to makes box; vertices always on the box; '*a*' always goes with vertices
- '*c*' distance from center to fo**C**i
- Transverse- always in line with vertices & foci; use '*a*'
- Conjugate- use '*b*'

<u>Using the discriminant</u>

- A, B & C are not a,b & c
- 0 → parab0la
- + → HYPERbola
- –
  - → **A** & **C**ircle (they match)
  - → **A** & **C** different numbers = ellipse