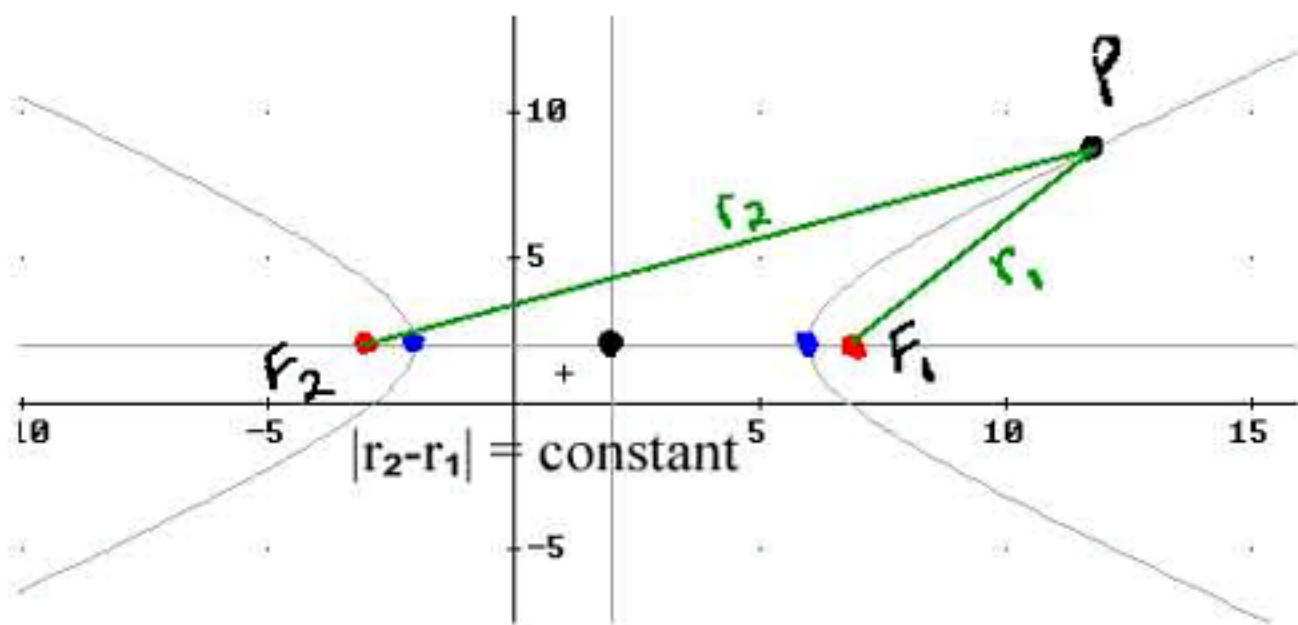


Geometry Reminder:

A **hyperbola** is the set of all points P in a plane such that the absolute value of the difference of the distances from P to two fixed points F_1 and F_2 is constant. The fixed points are the **foci** of the hyperbola. The line segments r_1 and r_2 are called the **focal radii**.



Refer to the Lecture Notes on Hyperbolas in Standard Form...

<http://www.lcusd.net/lchs/dclausen/algebra2/hyperbolas.htm>

Ex 1) For the hyperbola find the center, vertices, foci, draw the asymptotes and then graph.

$$\frac{(x-2)^2}{1} - \frac{(y-5)^2}{9} = 1$$

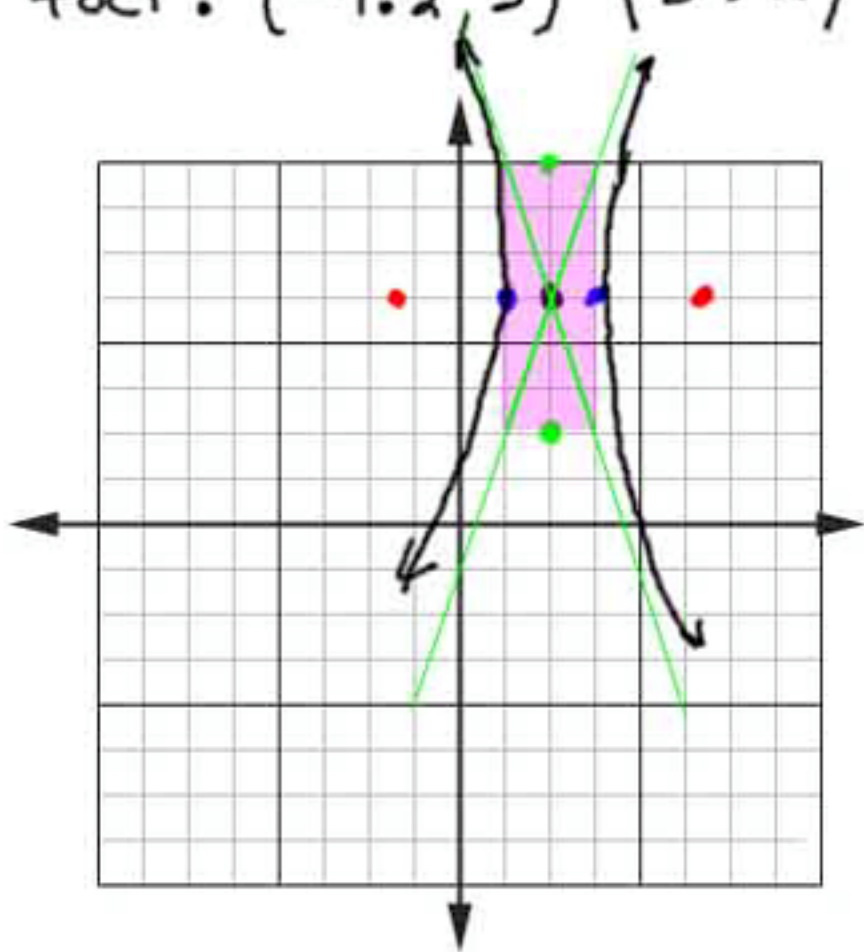
horizontal center $(2, 5)$

$$a = 1 \leftrightarrow b = 3 \updownarrow$$

vertices: $(1, 5)$ $(3, 5)$

$$c = \sqrt{1+9} = \sqrt{10} \doteq 3.2 \leftrightarrow$$

foci: $(-1.2, 5)$ $(5.2, 5)$



Ex 2) For the hyperbola find the center, vertices, foci, draw the asymptotes, and graph.

$$\frac{(y+3)^2}{25} - \frac{(x+1)^2}{16} = 1$$

vertical center $(-1, -3)$

$$a = 5 \downarrow \quad b = 4 \leftrightarrow$$

vertices: $(-1, 2)$ $(-1, -8)$

$$c = \sqrt{25+16} = \sqrt{41} \doteq 6.4$$

foci: $(-1, 3.4)$ $(-1, -9.4)$

