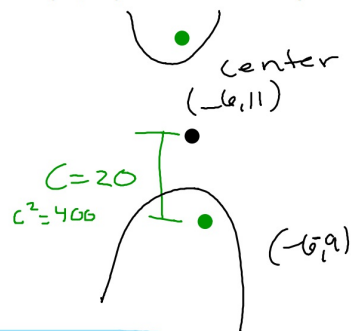The center is (-6, 11), the Transverse Axis has a length of 24. One Focus is (-6,-9). Write the equation of this Hyperbola.

center
$(-6,11)$

$C=20$
$c^2=400$

$(-6,9)$

$$\frac{(y-11)^2}{144} - \frac{(x+6)^2}{256} = 1$$

$2a = 24$
$a = 12$
$a^2 = 144$

$c^2 = a^2 + b^2$
$400 = 144 + b^2$

$256 = b^2$

The Vertices are (5,-15) and (33,-15) and one Focus is (42,-15). Write the equation of this Hyperbola.

center
Midpoint of the Vertices:
$(19, -15)$

$$\frac{(x-19)^2}{196} - \frac{(y+15)^2}{333} = 1$$

a^2
$(14)^2$

$a = 14$

$(5,-15)$ $(19,-15)$ $(33,-15)$ $(42,-15)$
V Center V F

$C = 23$
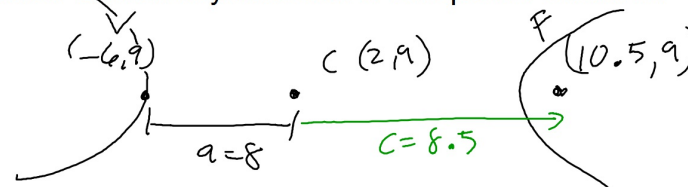
$c^2 = a^2 + b^2$
$529 = 196 + b^2$
$333 = b^2$
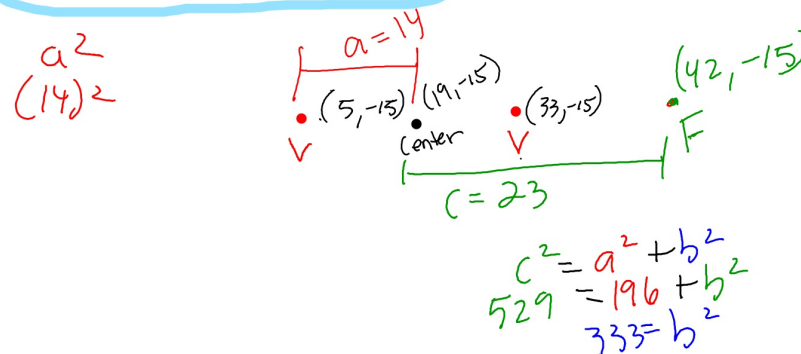
The center is $(-6, 8)$, the slopes of the asymptotes are $\pm\frac{13}{9}\frac{y}{x}$ and the Transverse Axis is vertical. Write the equation of this Hyperbola.

$$\frac{(y-8)^2}{169} - \frac{(x+6)^2}{81} = 1$$

Vertex

Transverse Axis
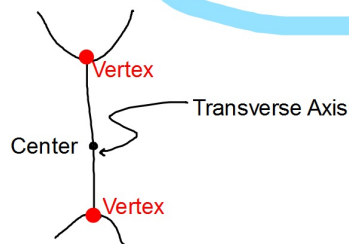
Center

Vertex

The center is (2,9), one Vertex is (-6,9), and one Focus is (10.5,9). Write the equation of this Hyperbola. Give your answer without any decimals or compound fractions.

$(-6,9)$ C $(2,9)$ F $(10.5,9)$

$a = 8$ $C = 8.5$

$$\frac{(x-2)^2}{64} - \frac{(y-9)^2}{33/4} = 1$$

$$\frac{(x-2)^2}{64} - \frac{(y-9)^2 \cdot \frac{4}{33}}{1} = 1$$

$$\frac{(x-2)^2}{64} - \frac{4(y-9)^2}{33} = 1$$

$c^2 = a^2 + b^2$
$72.25 = 64 + b^2$
$8.25 = b^2$
$8\frac{1}{4} = b^2$
$\frac{33}{4} = b^2$

You can now finish Hwk #26.

Practice Sheet: Translating Hyperbolas.

Due Tomorrow