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6) hyperbola, foci $(-3, -7)$, $(-3, 9)$ V: $(3, -4)$, $(-3, 6)$

Center is at $\frac{9 + (-7)}{2} = 1 \Rightarrow (3, 1)$

$$a = 5$$

$$\text{So } \frac{(y-1)^2}{5^2} - \frac{(x+3)^2}{b^2} = 1$$

Foci: $(-3, -7)$, $(-3, 9) \Rightarrow$

$$c = 9 - 1 = 8 \Rightarrow b^2 = 39$$

$\begin{matrix} \uparrow & \uparrow \text{ center} \\ (-3, 9) & (-3, 1) \\ \text{foci} \end{matrix}$

$$\frac{(y-1)^2}{25} - \frac{(x+3)^2}{39} = 1$$