$$x^2 - 25y^2 + 25 = 0$$

Turn this into a hyperbola equation. Start by moving the 25

$$x^2 - 25y^2 = -25$$

Divide by –25

$$\frac{x^2}{-25} + \frac{y^2}{1} = 1$$

Re-order x^2 & y^2 stuff

$$\frac{y^2}{1} - \frac{x^2}{25} = 1$$

Is this UP/DOWN or LEFT/RIGHT?   Is transverse axis VERTICAL or HORIZONTAL?

UP/DOWN   VERTICAL

What is a?

$$a = 1$$

What is b?

$$b = 5$$

What is c?

$$c^2 = a^2 + b^2 \longrightarrow c^2 = 1^2 + 5^2 \longrightarrow c^2 = 1 + 25 = 26$$
$$c = \sqrt{26}$$

What is the center? $(0, 0)$

What are the slopes of the asymptotes?

Put the $\sqrt{}$ of the number under y^2 on top $\longrightarrow \pm\frac{1}{5}$
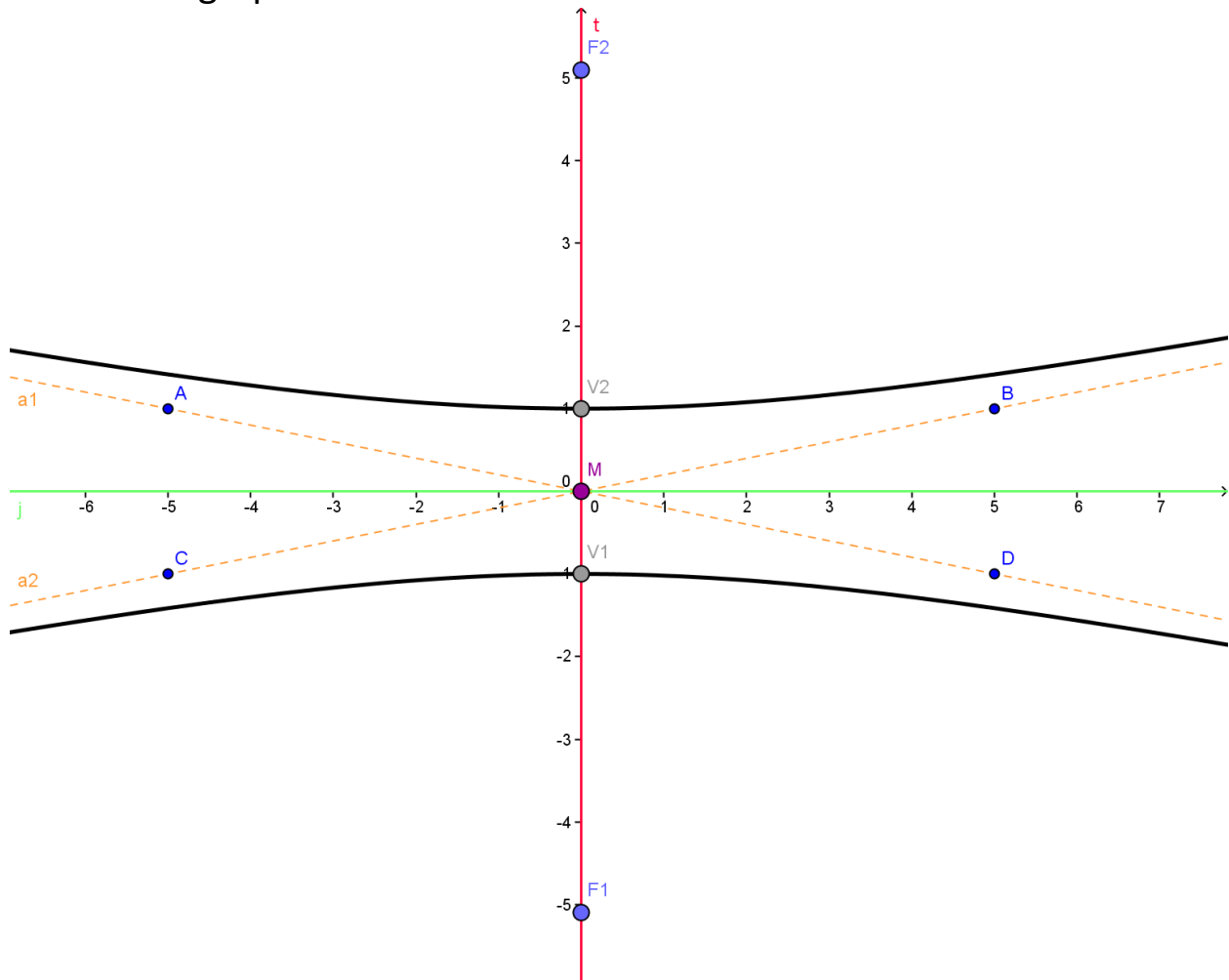
What are the verticies (look at a)?

$a = 1$, so go UP/DOWN 1 from the center $\longrightarrow (0, \pm1)$

What are the foci(look at c)?

$c = \sqrt{26}$, so go UP/DOWN $\sqrt{26}$ from the center $\longrightarrow (0, \pm\sqrt{26})$

Here is the graph.

You can use the slope to get points on the asymptotes. On this graph, they are the points *A*, *B*, *C*, & *D*.

The slope for these asymptotes is $\pm\frac{1}{5}$, so …
1) start at the center [which is (0, 0) on this graph] and go up 1 and over 5 in both directions,
2) start at the center and go down 1 and over 5 in both directions.

You can make a rectangle with the four points (the verticies are also on this rectangle). The diagonals of this rectangle are the asymptotes!