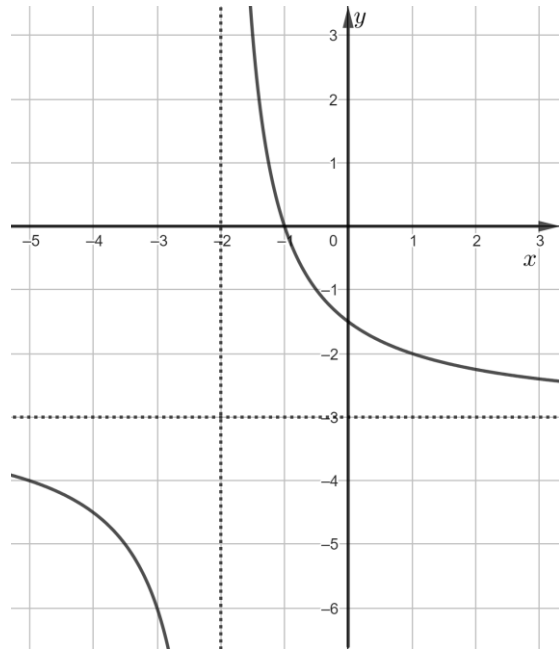


Translating a hyperbola $y = \frac{a}{x}$

The graph of the function f is a translation of the hyperbola given by the formula $y = \frac{3}{x}$ by a vector $\vec{v} = [p, q]$.



(1) What are the coordinates p, q of the vector \vec{v} ?

$$p = \dots \quad q = \dots$$

(2) Write down the formula of the function f .

$$f(x) = \dots\dots\dots$$

(3) Write down the domain of the function f .

$$D_f = \dots\dots\dots$$

(4) Write down the range of the function f .

$$R_f = \dots\dots\dots$$

(5) Write down the set of all arguments for which values of the function f are less than or equal to zero.

$$f(x) \leq 0 \text{ dla } x \in \dots\dots\dots$$

(6) Write down the equation of the horizontal asymptote for the graph of the function f

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(7) Write down the equation of the vertical asymptote for the graph of the function f

.....

(8) Mark the true sentences with the letter T and the false sentences with the letter F.

- (a) The function f decreases in the union of intervals $(-5, -4) \cup (-3, -2)$.
- (b) The function f monotonic.
- (c) The function f decreases in the union of intervals $(-5, -4) \cup (-2, -1)$.
- (d) $f(-\sqrt{2}) \cdot f(-2025) < 0$.
- (e) $f(x) = \frac{-3x-3}{x+2}$.