Problem:

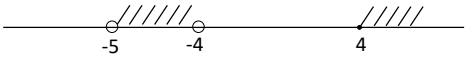
Find the domain of the function:

$$y = \frac{\sqrt{x^2 - 16}}{\log_2(x+5)}.$$

Solution:

The function is defined when

$$\begin{cases} x^2 - 16 \geq 0 \\ \log_2(x+5) \neq 0 \end{cases} \Rightarrow \begin{cases} x^2 - 16 \geq 0 \\ x + 5 > 0 \\ x + 5 \neq 1 \end{cases} \Rightarrow \begin{cases} (x-4)(x+4) \geq 0 \\ x > -5 \\ x \neq -4 \end{cases} \Rightarrow$$



$\Rightarrow$ the domain will be $(-5;-4) \cup [4;+\infty)$.

Answer: $(-5;-4) \cup [4;+\infty)$.