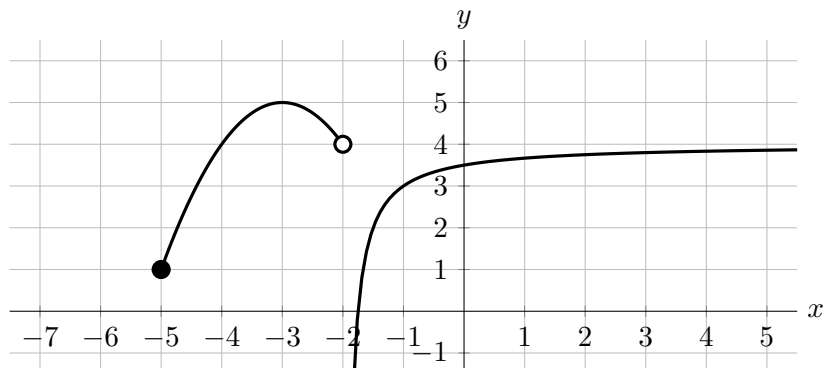


3. [14 points] Consider the function $f(x)$, graphed below. Note that $f(x)$ has one vertical asymptote and one horizontal asymptote, and $f(x)$ is not defined for x values to the left of those shown in the graph.



- a. [7 points] Find:
- the domain of $f(x)$
 - the range of $f(x)$
 - an equation for the horizontal asymptote of $f(x)$
 - an equation for the vertical asymptote of $f(x)$
- b. [7 points] Let $g(x) = 3f(-4(x - 2)) + 1$. Find the following. Show how you obtained your answers, either by showing work, drawing diagrams, or explaining your reasoning.
- the domain of $g(x)$
 - an equation for the horizontal asymptote of $g(x)$
 - an equation for the vertical asymptote of $g(x)$
4. [11 points] Mia and Jonathan sell vegetables at the farmer's market at different booths. Their revenues, in **hundreds** of dollars, h hours after 9 am on a particular day are $M(h)$ (for Mia's revenue) and $J(h)$ (for Jonathan's revenue). Assume that the two functions are invertible.
- [2 points] Give a practical interpretation of the equation $J(2) = 3$.
 - [3 points] Give a practical interpretation of the expression $J(M^{-1}(4))$, or explain why the expression does not make sense in the context of the problem.
 - [3 points] Write an equation corresponding to the following statement: Mia's revenue at 12pm is \$100 less than twice Jonathan's revenue at 11 am.
 - [3 points] Let $T(k)$ be the total revenue, in **dollars** of both Mia and Jonathan k **minutes** after 9 am. Find a formula for $T(k)$ in terms of M and/or J .