

Section 7.4 Extra Practice

1. For each function,
- write the reciprocal function
 - state the domain of the function and of its reciprocal function
 - state the range of the function and of its reciprocal function
- a) $y = x + 4$ b) $y = 3x - 9$
 c) $y = (x + 2)(x - 2)$ d) $y = x^2 + 6x + 9$

2. For each function,
- state the zeros
 - write the reciprocal function
 - identify the non-permissible values of the corresponding rational expression
 - state the equation(s) of the vertical asymptote(s)
- a) $f(x) = 3 + x$
 b) $g(x) = 2x - 1$
 c) $h(x) = (x + 2)(x - 3)$
 d) $j(x) = -2x^2 - 12x - 10$

3. State the equation(s) of the vertical asymptote(s) for each function.

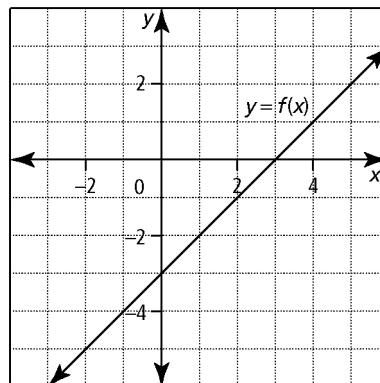
a) $f(x) = \frac{1}{5 - x}$
 b) $g(x) = \frac{1}{7x - 2}$
 c) $h(x) = \frac{1}{(x + 1)(2x + 1)}$
 d) $h(x) = \frac{1}{2x^2 + 2x - 24}$

4. What are the x -intercepts and y -intercepts of each function?

a) $y = \frac{1}{2x + 5}$
 b) $y = \frac{1}{3 - 2x}$
 c) $f(x) = \frac{1}{(2x + 3)(x - 1)}$
 d) $g(x) = \frac{1}{x^2 + 7x + 12}$

5. Sketch the graph of $y = f(x)$ and the graph of $y = \frac{1}{f(x)}$ on the same set of axes. Label the asymptotes, the invariant points, and the intercepts.
- a) $f(x) = x + 2$
 b) $f(x) = 3x$
 c) $f(x) = (x - 3)(x + 3)$
 d) $f(x) = (x + 1)^2$

6. Copy the graph of $y = f(x)$, and sketch the graph of the reciprocal function, $y = \frac{1}{f(x)}$.



7. Copy the graph of $y = \frac{1}{f(x)}$, and sketch the graph of $y = f(x)$.

