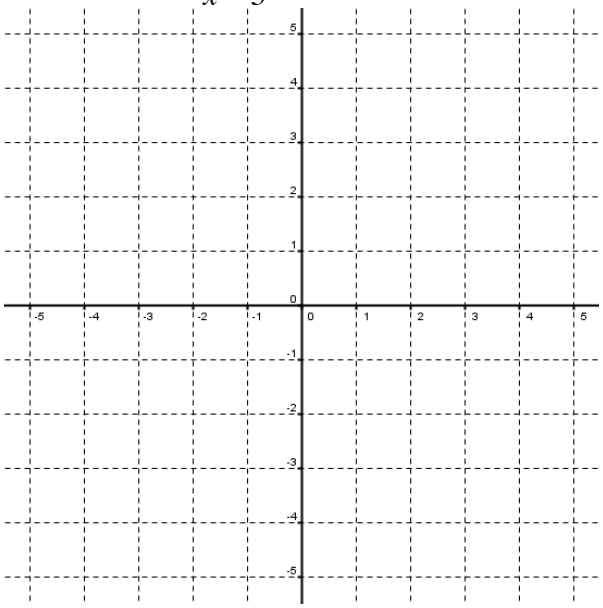
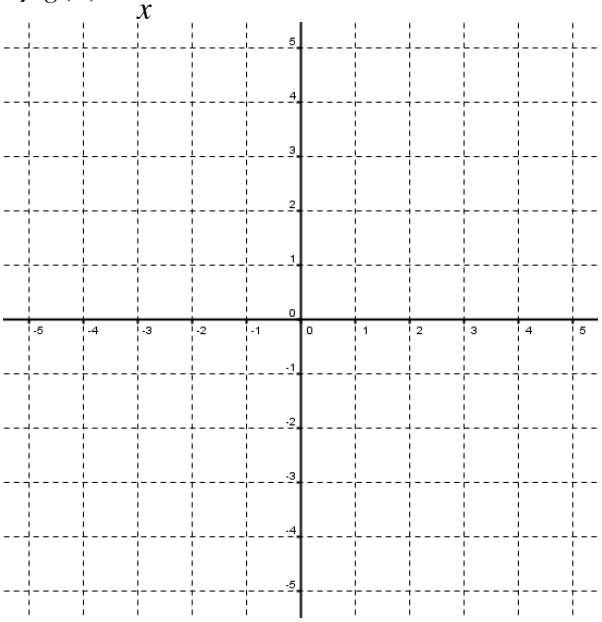
MCR3U Graphs and equations of reciprocal functions

1. Graph the following reciprocal functions, marking all points as accurately as possible.

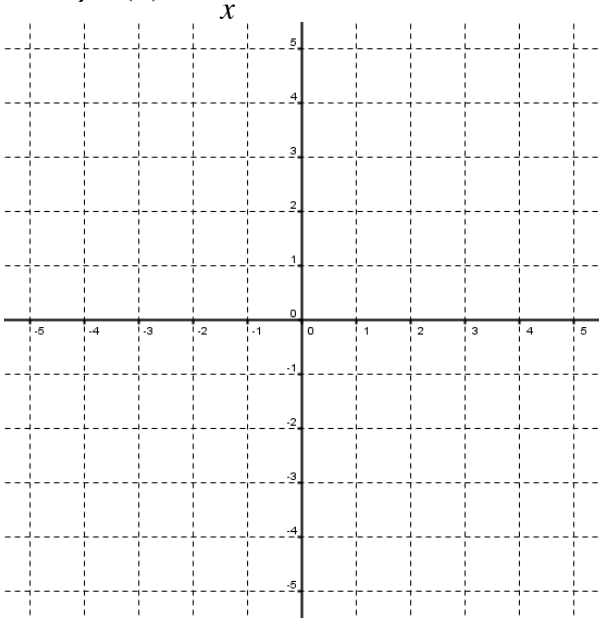
a) $f(x) = \dfrac{1}{x-3}$



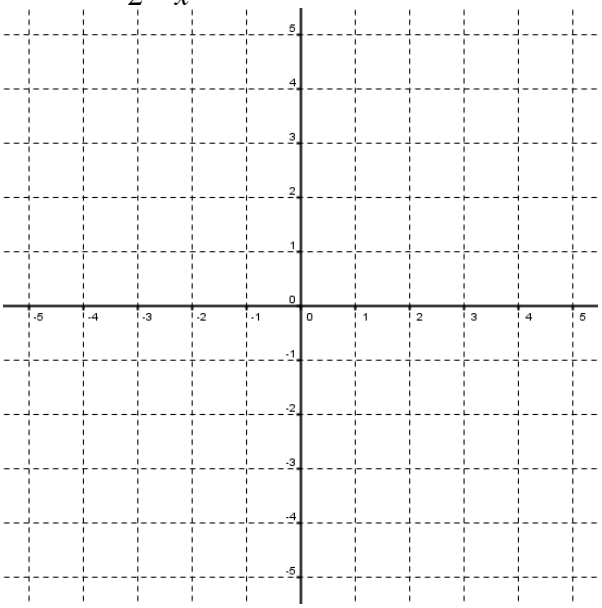
b) $g(x) = \dfrac{1}{x} - 2$



c) $h(x) = -\dfrac{1}{x} + 4$



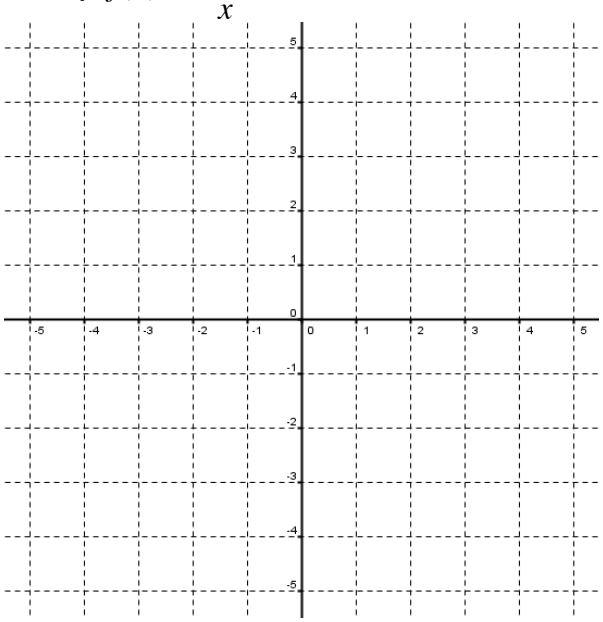
d) $i(x) = \dfrac{1}{2-x}$



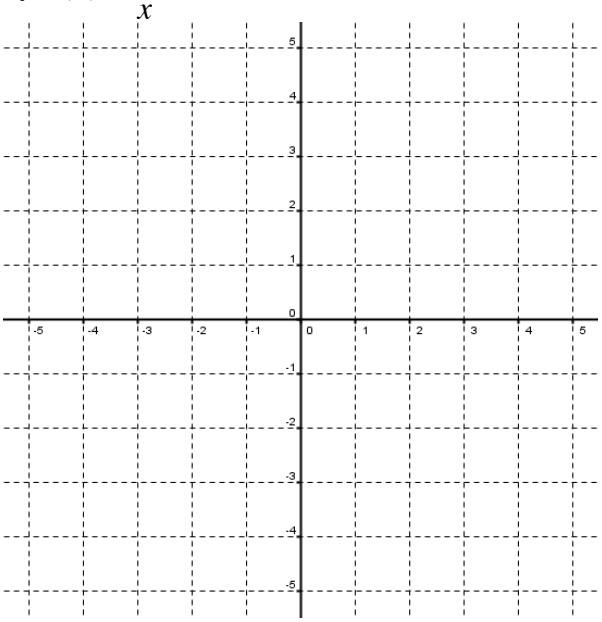
2. Given the linear function $y = 3x - 12$, sketch its reciprocal function and its inverse function.

3. Graph the following reciprocal functions. State the transformations applied to $f(x) = \frac{1}{x}$ in each case.

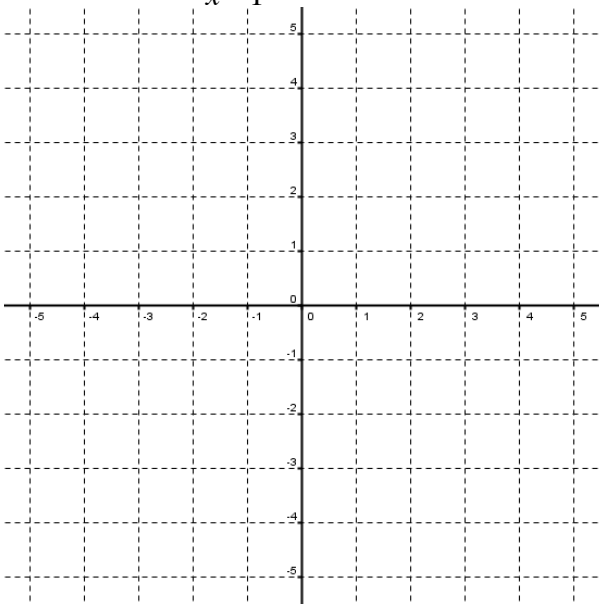
a) $j(x) = -\frac{4}{x}$



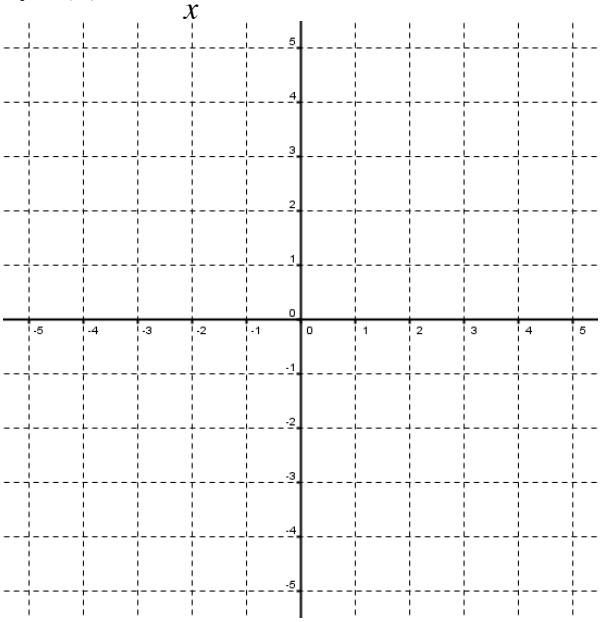
b) $k(x) = \frac{2}{x} + 1$



c) $m(x) = \frac{3}{x-1} + 2$

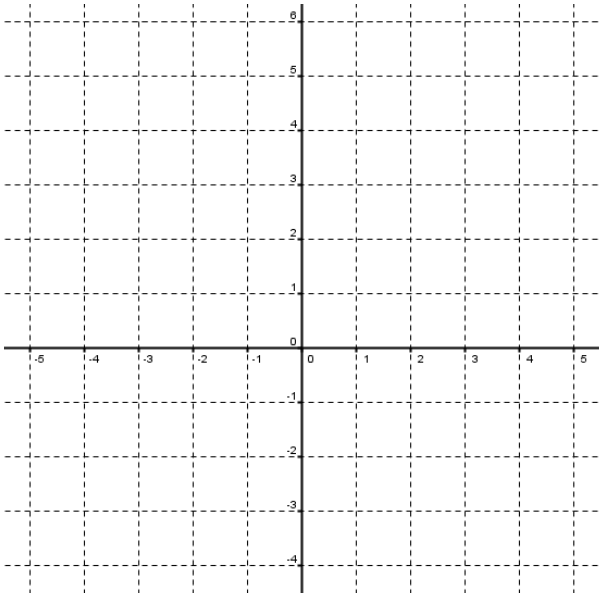


d) $n(x) = 3 - \frac{2}{x}$

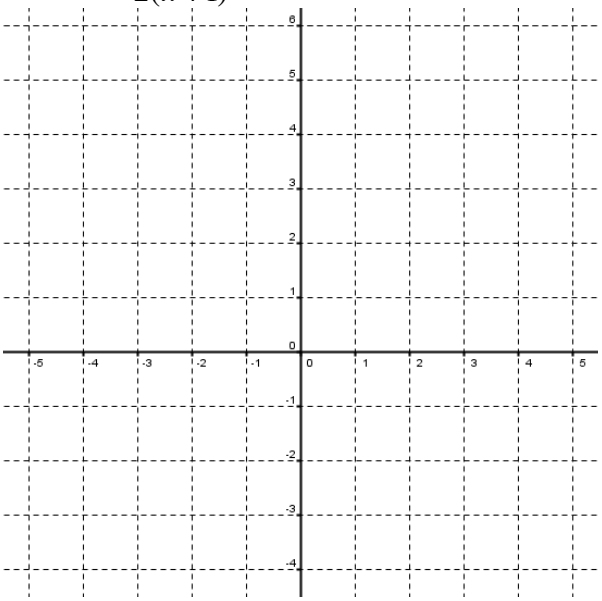


4. Graph the following reciprocal functions. Clearly label all horizontal and vertical asymptotes.

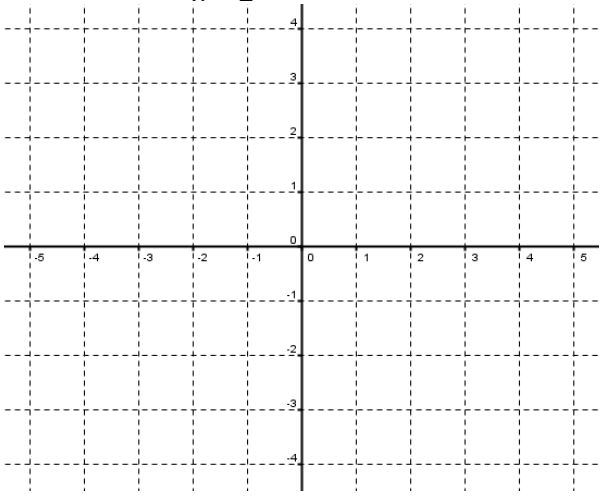
a) $p(x) = \dfrac{1}{x-3} + 4$



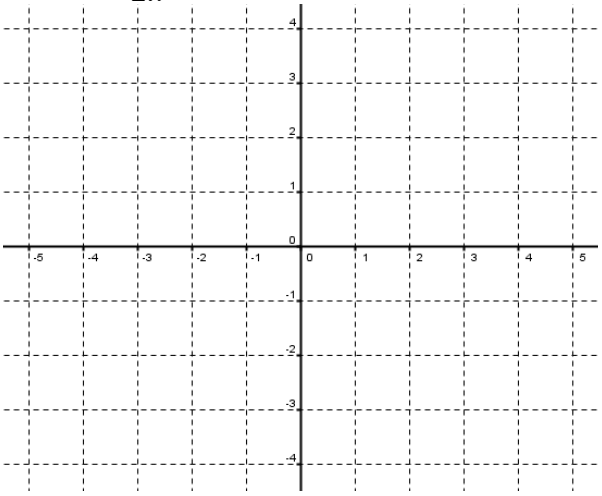
b) $q(x) = \dfrac{1}{2(x+1)} + 3$



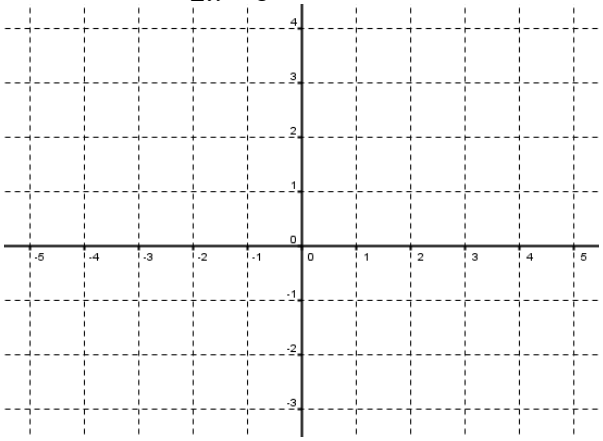
c) $r(x) = \dfrac{-1}{x-2} - 3$



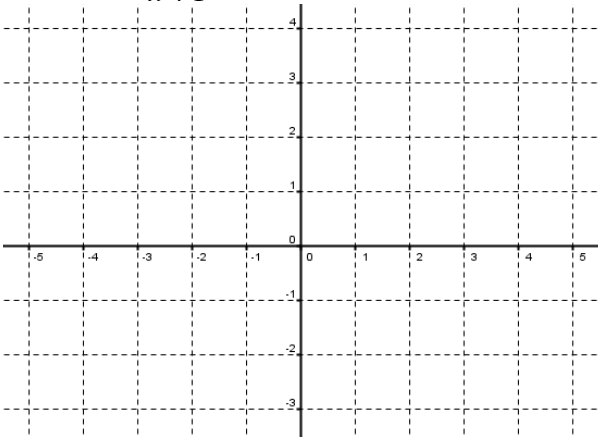
d) $s(x) = \dfrac{1}{2x} + 1$



e) $t(x) = \dfrac{1}{2x-8}$

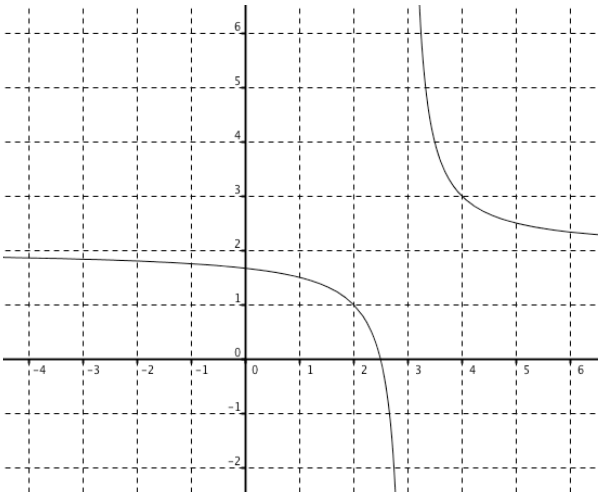


f) $u(x) = \dfrac{1}{-x+1} + 2$

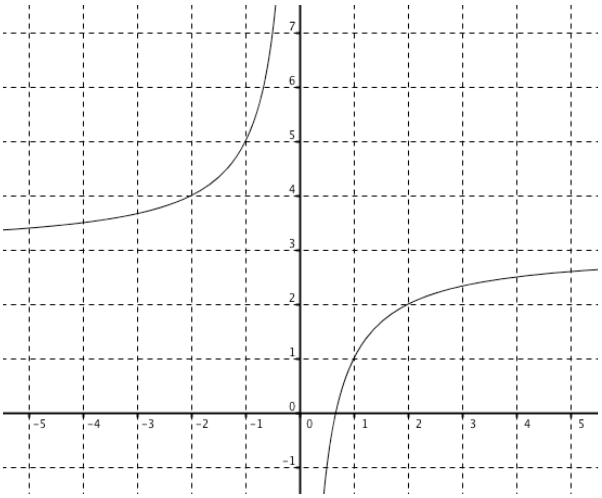


5. Write equations for the reciprocal functions shown in the following graphs.

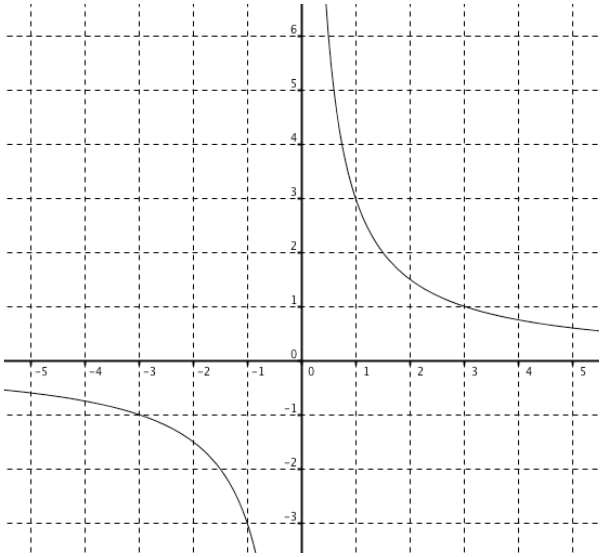
a)



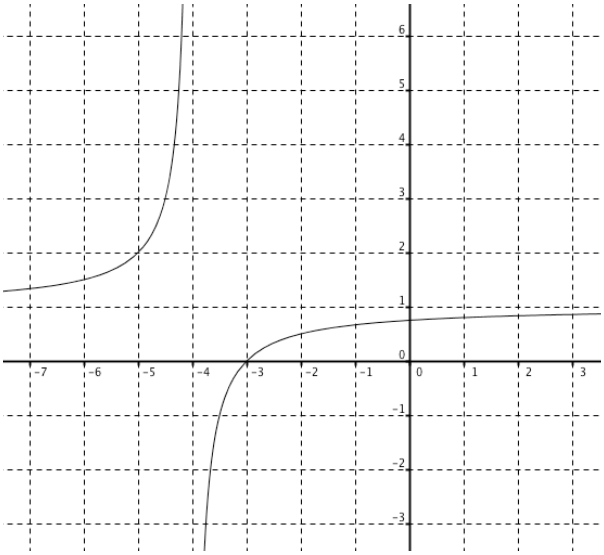
b)



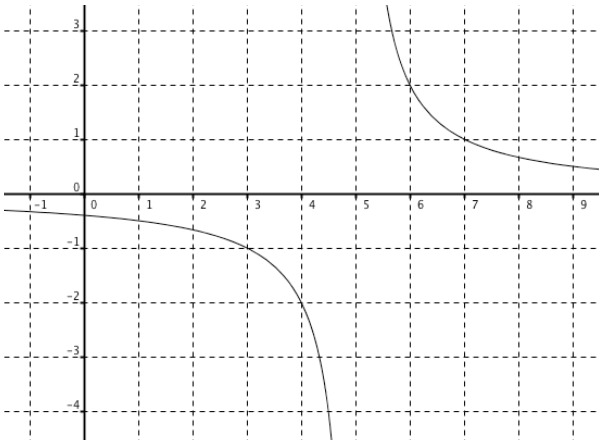
c)



d)



e)



f)