MATH 5 S01

RATIONAL FUNCTIONS
pre-test

(A) Given $f(x) = \frac{3x-1}{2x-4}$ and (A') $g(x) = \frac{-4}{x+5} + 1$

for each:

a) graph

b) perform a complete study

c) derive their inverses ($f^{-1}(x)$ and $g^{-1}(x)$)

d) sketch their inverses

e) convert general to standard form ($f(x)$); convert standard to general form ($g(x)$)

(B) Solve $\frac{x+1}{x-5} < 2$

(C) $h(x) = 2x+5$ $\quad k(x) = x-5$ $\quad m(x) = \frac{x+1}{5x-3}$

a) $\frac{h(x)}{k(x)} =$ $\quad$ b) $m(k(x)) =$ $\quad$ c) $m(m^{-1}(x)) =$

(D) Given the rational function $i(x)$, with $h=-1$, $k=2$ passing through $(2,3)$, find the rule.

(E)

Example 4.1.5. The number of students N at local college who have had the flu t months after the semester begins can be modeled by the formula $N(t) = 500 - \frac{450}{1+3t}$

1. (a) Find and interpret $N(0)$. (b) Sketch $N(t)$.
2. How long will it take until 300 students will have had the flu?
3. Determine the behavior of N as $t \to \infty$. Interpret this result graphically and within the context of the problem.