9.7 Graphs of Rational functions

ex 1.) $\frac{x^2+7x+12}{x^2-4}$ (write in factored form)

$\frac{(x+3)(x+4)}{(x+2)(x-2)}$

ex 2) $\frac{x^3-5x^2-14x}{x^2+2x+1}$ (write in factored form)

$x(x^2-5x-14)$

$x(x-7)(x+2)$

$\frac{x(x-7)(x+2)}{(x+1)(x+1)}$

finding asymptotes: factor the bottom
Asymptotes exist where bottom would = 0

ex. $\frac{x^2+7x+12}{x^2-4}$ Don't worry about the top

$(x+2)(x-2)$

$x+2=0$
$-2 \quad -2$
$x=-2$

$x=2$
$x=-2$ } vertical asymptotes

Rewriting as 1 fraction

p547
1a+b
:b+a
3b
||
x+b

$\frac{3(x-2)}{1} + \frac{4x-1}{x-2}$ (get common denominator $(x-2)$)

$\frac{3(x-2)}{(x-2)} + \frac{4x-1}{} = \frac{3x-6+4x-1}{x-2} = \boxed{\frac{7x-7}{x-2}}$