IB PreHL Rational Functions Exit Slip

Name: Key

Period: _____

No Calculators!

1. Given $h(x)=\dfrac{(x-1))(x+2)(x+1)}{2x^2+x-1}$ $= \dfrac{(x-1)(x+2)(x+1)}{(2x-1)(x+1)} = \dfrac{(x-1)(x+2)}{(2x-1)}$

a. Find the vertical asymptote(s) $x=\frac{1}{2}$

b. Find the oblique asymptote. $y=\frac{1}{2}x+\frac{3}{4}$

$\frac{1}{2}x+\frac{3}{4}$

$2x-1 \;\big|\; x^2+x-2$

$x^2-\frac{1}{2}x$

$\frac{3}{2}x-2$ $\quad -\frac{8}{4}$ $+\frac{3}{4}$

$-\big)\ \frac{3}{2}x-\frac{3}{4}$

$-\frac{5}{4}$

c. Find the hole (removable discontinuity) in form of (x, y) if any. $\left(-1, \frac{2}{3}\right)$ $\quad x=-1 \quad y=\frac{(-2)(1)}{-3}=\frac{2}{3}$

d. Find x-intercept(s) and y-intercept. x-int: $(1,0)$ and $(-2,0)$ $\quad$ y-int: $(0,2)$

e. Sketch the graph using ~~the answers of a-d.~~

Graph is attached.

2. For the function $f(x)=\dfrac{-6x^2-3x+18}{2x^2-5x+3}$, state the followings. $f(x) = \dfrac{-3(2x-3)(x+2)}{(2x-3)(x-1)} = \dfrac{-3(x+2)}{x-1}$

a. Vertical Asymptote(s): $x=1$ $\quad$ b. Horizontal Asymptote: $y=-3$

c. Hole(s)(removable discontinuity) $\left(\frac{3}{2}, -21\right)$ $\quad$ d. Oblique Asymptote: None

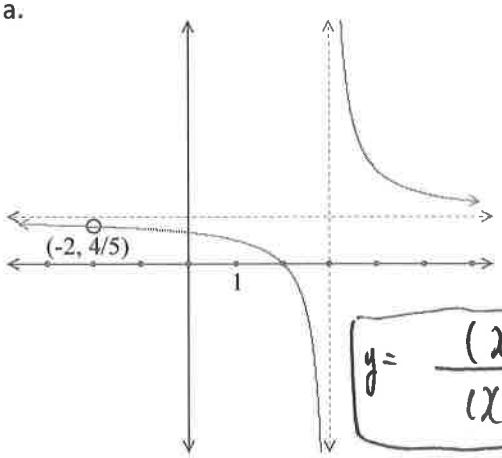
e. x-intercept(s): $x=-2,\ y=0$ $\quad$ f. y-intercept: $(6,0)$

e. Sketch the graph using above answers

Graph is attached.

3. Write the equation of the following rational functions.

a.



$y=\dfrac{(x-2)(x+2)}{(x-3)(x+2)}$

V.A: $x=3$ $\quad$ H.A: ? $\quad$ $\left(y=\dfrac{a(x-2)}{x-3}\right)$

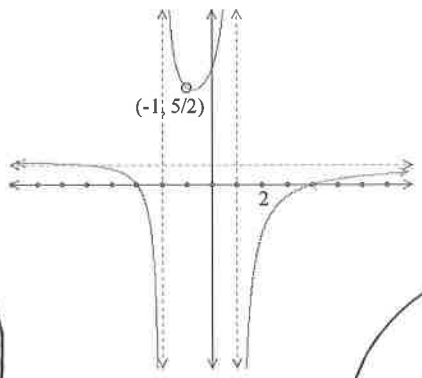
x-int: $(2,0)$

y-int: ?

Hole $(-2, \frac{4}{5})$ $\quad$ check. $\quad \frac{4}{5}=a\left(\frac{-4}{-5}\right)$

$a=1$

b.



V.A: $x=-2$, $x=1$

H.A: ?

Hole: $(-1, \frac{5}{2})$

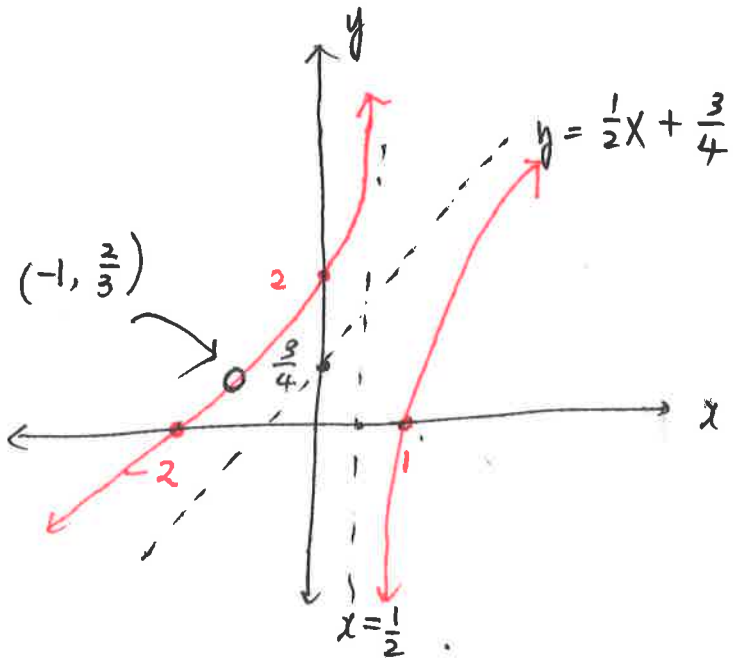
x-int: $(4,0)$, $(-3,0)$

y-int: ?

check.

$y=\dfrac{(x-4)(x+3)}{(x+2)(x-1)}$

1. Graph.



2. Graph