IB Pre HL
Graphing Rational Functions

Name: Key
Period: _____

State the horizontal asymptote, vertical asymptote(s), hole(s), x-intercept(s), and y-intercept. And then sketch the graph showing all these elements.

a. $y = \dfrac{7-3x}{2x^2+x-3}$

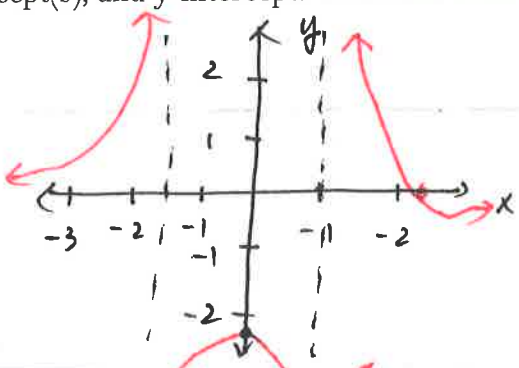
$= \dfrac{7-3x}{(2x+3)(x-1)}$

V.A: $x=1$, $x=-\frac{3}{2}$

H.A: $y=0$

Hole(s): None

X-int: $(\frac{7}{3}, 0)$ y-int: $(0, -\frac{7}{3})$



b. $y = \dfrac{2x+1}{4x^2-4x-3}$

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

$= \dfrac{1}{2x-3}$

V.A: $x = \frac{3}{2}$

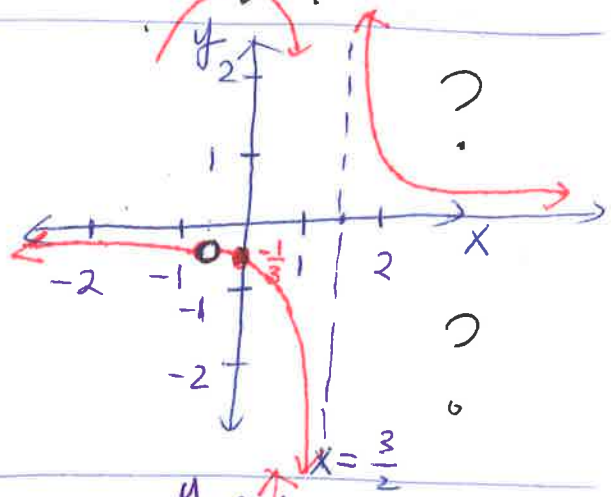
H.A: $y = 0$

Hole(s): $x = \frac{-1}{2}$ $y = \frac{-1}{4}$.

X-int: None

y-int: $(0, \frac{-1}{3})$

Check: $x=5$ $y>0$



c. $y = \dfrac{x^2+3x-4}{2x^2+7x-4}$

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

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

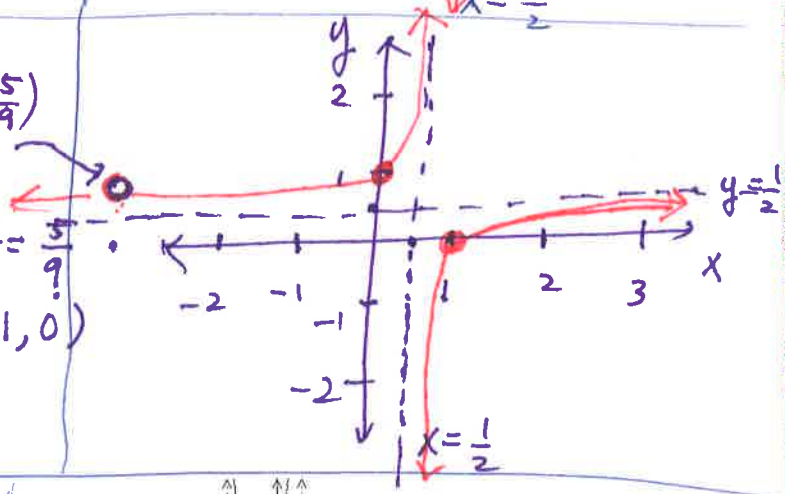
V.A: $x = \frac{1}{2}$

H.A: $y = \frac{1}{2}$

Hole(s): $x=-4$, $y = \frac{-5}{-9} = \frac{5}{9}$ $(-4, \frac{5}{9})$

X-int: $x-1=0 \Rightarrow x=1$: $(1,0)$

y-int: $(0,1)$



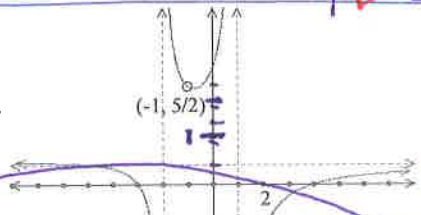
Write the equation for the given conditions.

a. Vertical asymptotes; x=1/2.
Horizontal asymptote: y=-1/2
Holes: -1
x-intercepts: (4, 0)
y-intercept: (0, -4)

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

when $x=0 \Rightarrow \dfrac{(-1)(1)(-4)}{(-1)(1)} = \dfrac{4}{-1} = -4$

b.



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

H.A: $y=\frac{1}{2}$

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

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

y-int: $(0,?)$

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

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