MORE PRACTICE – More Rational Functions

State the values of any vertical asymptotes, horizontal asymptotes, slant asymptotes and holes in the graph of the equation of the rational function.

1. $f(x)=\frac{3}{x^2+5x+6}$ $(x+3)(x+2)$ VA: $-3,-2$ HA: 0 SA: NONE Holes: NONE

2. $f(x)=\frac{x-1}{x^2+3x-4}$ $(x+4)(x-1)$ VA: -4 HA: 0 SA: NONE Holes: 1

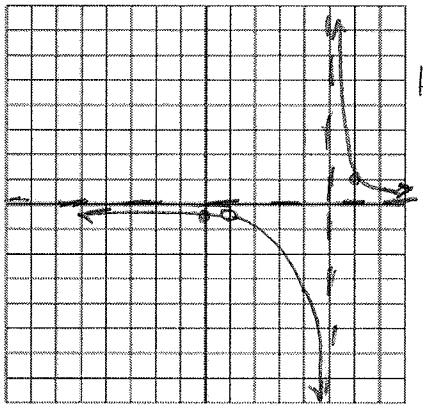
3. $f(x)=\frac{4x^2}{x^2-3x-10}$ $(x-5)(x+2)$ VA: $5,-2$ HA: 4 SA: NONE Holes: NONE

4. $f(x)=\frac{x^2+4x+3}{x-2}$ $(x+3)(x+1)$ VA: 2 HA: NONE SA: $y=x+6$ Holes: NONE

$$x-2\overline{)\,x^2+4x+3}\quad x+6$$
$$-\,(x^2-2x)$$
$$6x+3$$

Graph the following functions:

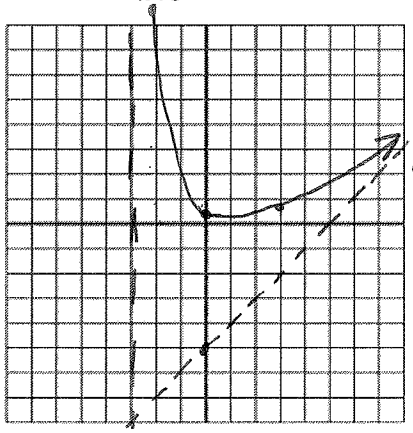
5. $f(x)=\frac{x-1}{x^2-6x+5}$ $(x-5)(x-1)$ VA: 5 HA: 0 Hole: 1



x	y
0	$-1/5$
6	$5/5=1$
1	$-1/4$

6. $f(x)=\frac{x^2-2x+1}{x+3}$ $(x-1)(x-1)$

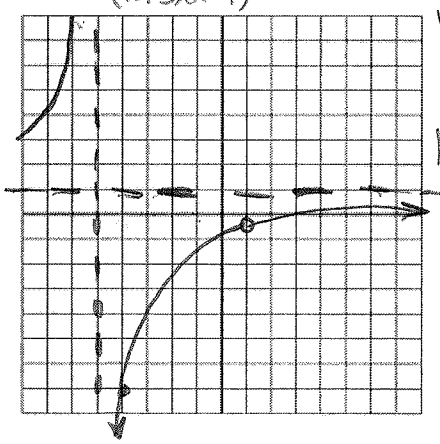
$$x+3\overline{)\,x^2-2x+1}\quad x-5$$
$$-\,(x^2+3x)$$
$$-5x+1$$



VA: -3 HA: NONE SLANT ASYMPTOTE: $y=x-5$

x	y
0	$1/3$
3	$2/3$
-2	9

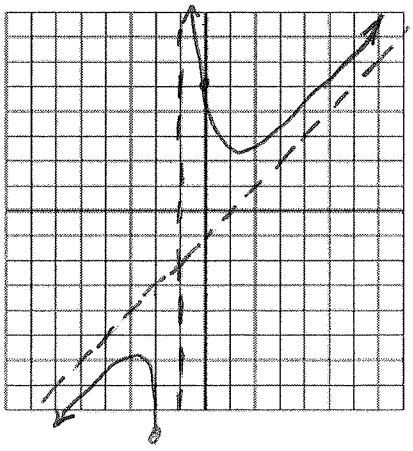
7. $f(x)=\frac{x^2-4x+3}{x^2+4x-5}$ $(x-3)(x-1)$ $(x+5)(x-1)$



VA: -5 HA: $1=y$ Hole: $1=x$

x	y
-4	-7
1	$-1/3$
-6	9

8. $f(x)=\frac{x^2+5}{x+1}$



VA: -1 HA: NONE SA:

$$x+1\overline{)\,x^2+0x+5}\quad x-1$$
$$-\,(x^2+x)$$
$$-x+5$$

x	y
0	5
-2	-9