STATIONS ACTIVITY: RATIONAL FUNCTIONS Name: _____

1. Find the **horizontal asymptote** and the **vertical asymptote(s).** Determine if there are any **holes.**

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

Horizontal Asymptote: $y = 0$

Vertical Asymptote(s): $x = 1$

Holes: $x = 3$ $\left(3, \frac{1}{2}\right)$

Identify the **x-intercepts** and the **y-intercepts** of the rational function. (Remember x-intercepts and y-intercepts are points)

y-intercept: $\frac{0-3}{0-0+3} = \frac{-3}{3} = -1$

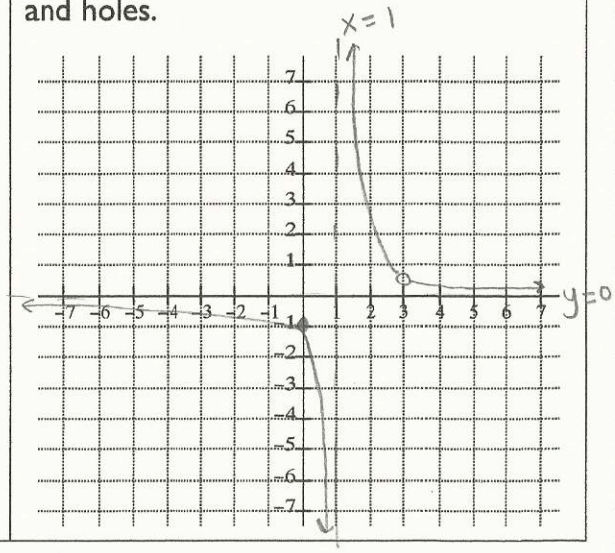
x-intercept: $0 = \frac{x-3}{x^2-4x+3}$

$0 = x-3$ ~~$x=3$~~

y-intercept: $(0, -1)$

x-intercept(s): NONE

Sketch a graph of the rational function. Clearly identify all intercepts, asymptotes and holes.



2. Find the **horizontal asymptote** and the **vertical asymptote(s).** Determine if there are any **holes.**

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

Horizontal Asymptote: $y = 2$

Vertical Asymptote(s): $x = -1$

Holes: NONE

Identify the **x-intercepts** and the **y-intercepts** of the rational function. (Remember x-intercepts and y-intercepts are points)

y-intercept: $\frac{0-3}{0+1} = \frac{-3}{1} = -3$

x-intercept: $0 = \frac{2x-3}{x+1}$

$0 = 2x-3$

$x = \frac{3}{2}$

y-intercept: $(0, -3)$

x-intercept(s): $\left(\frac{3}{2}, 0\right)$

Sketch a graph of the rational function. Clearly identify all intercepts, asymptotes and holes.