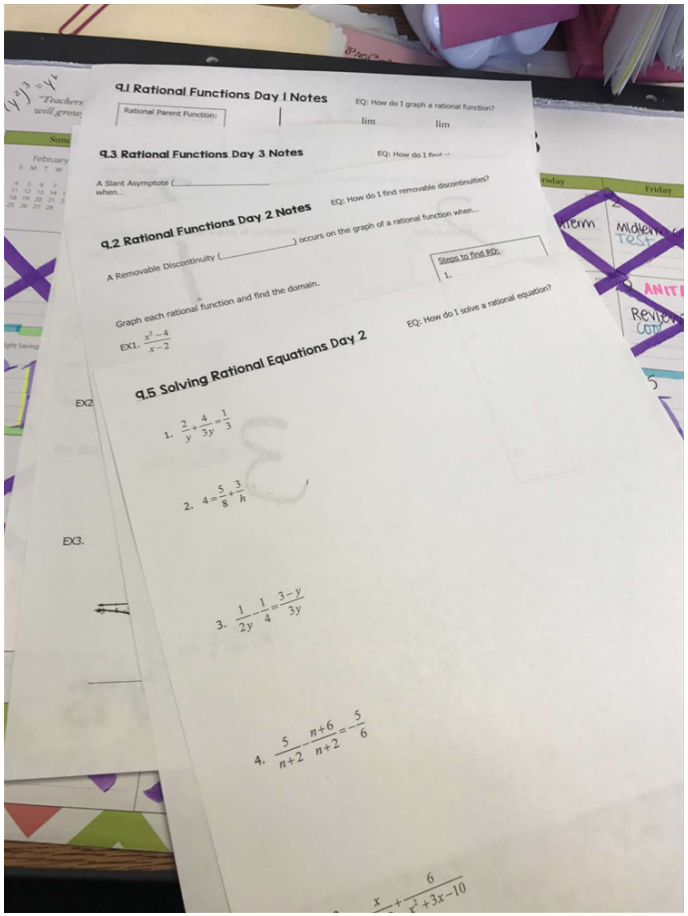
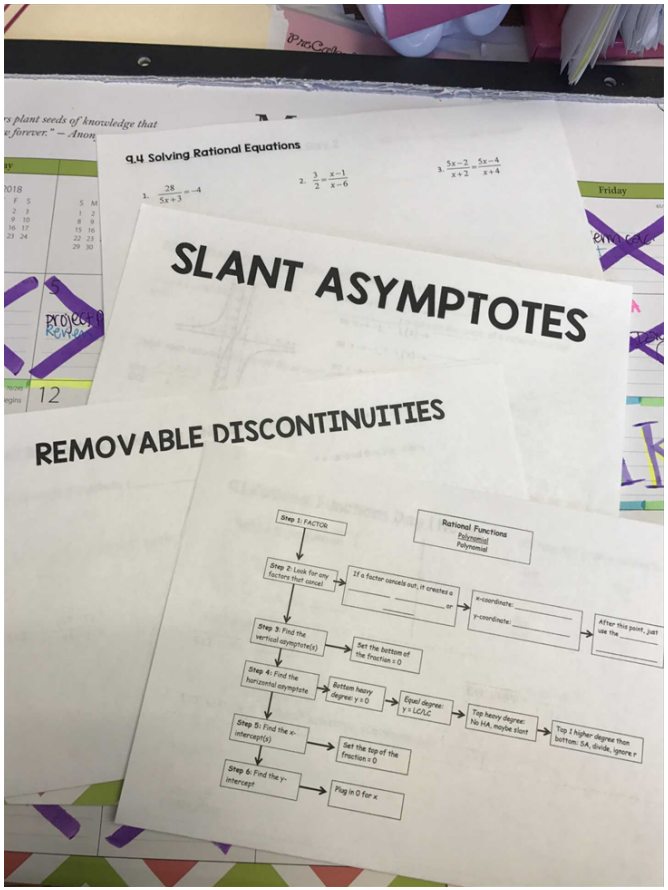
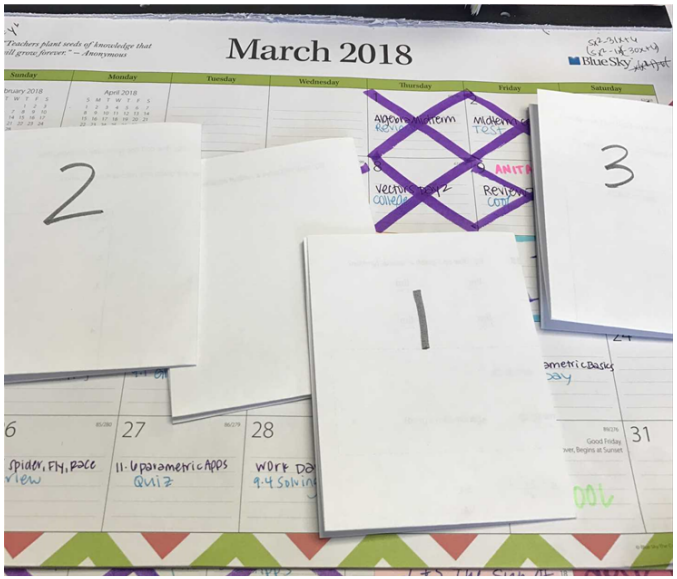
Step 1: All 4 papers need the their titles facing up



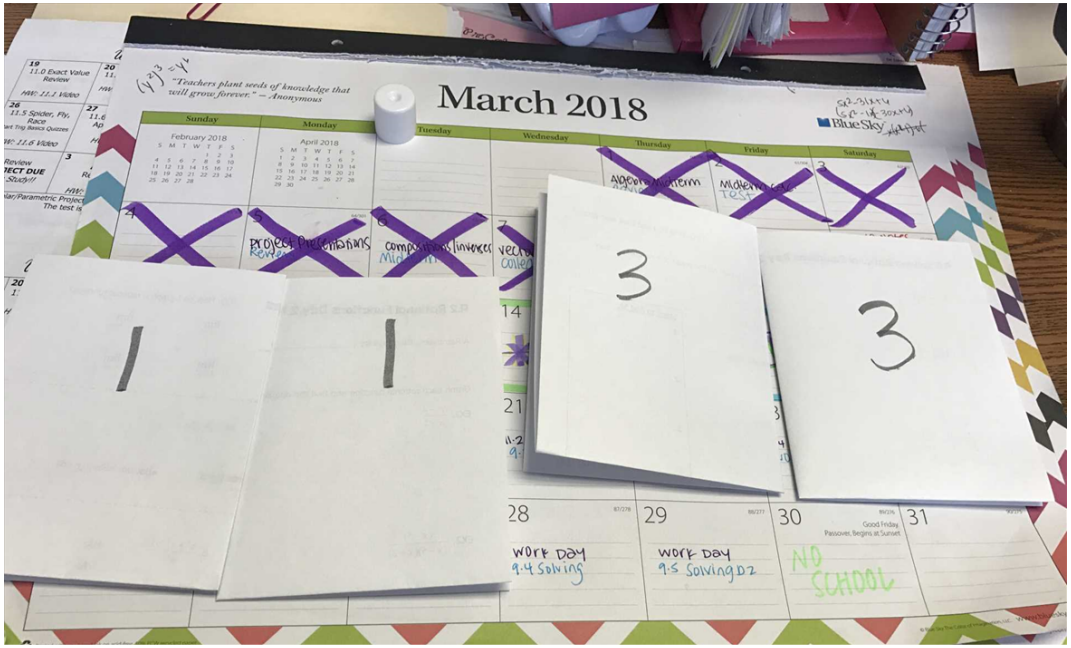
Step 2: Fold all the papers up (hamburger) so they look like this!



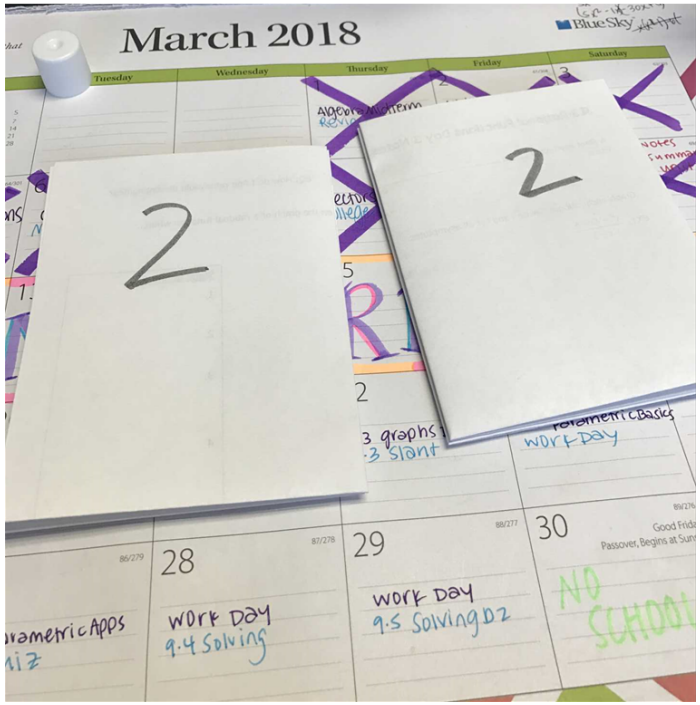
Step 3: Fold all the half papers in half again! So now they are little rectangles.



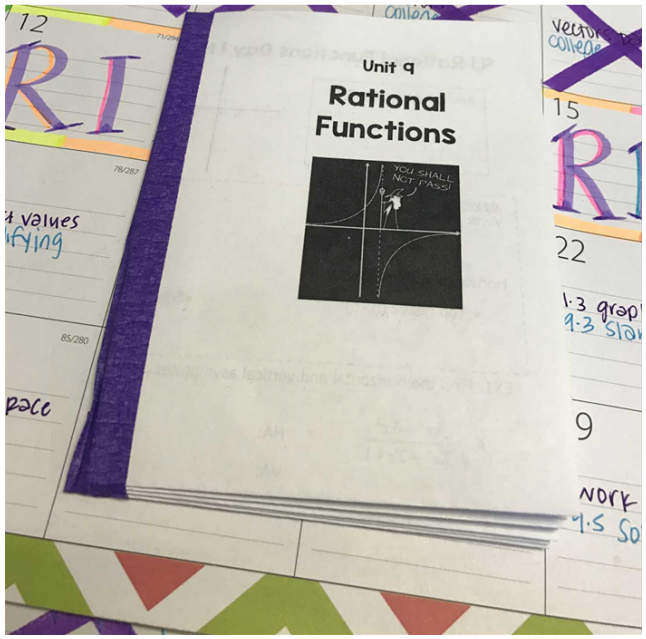
Step 4: Glue the 1's and 3's together. Make sure the folds are together.

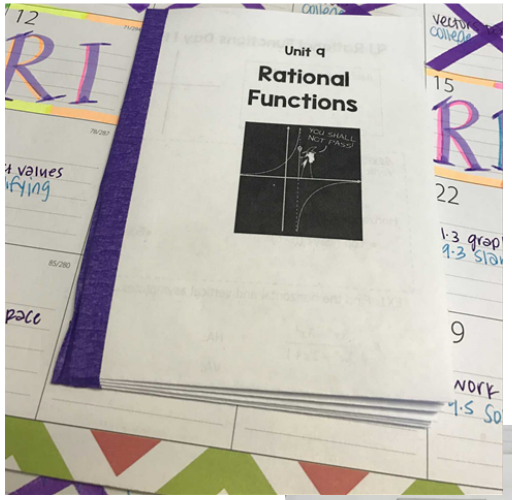


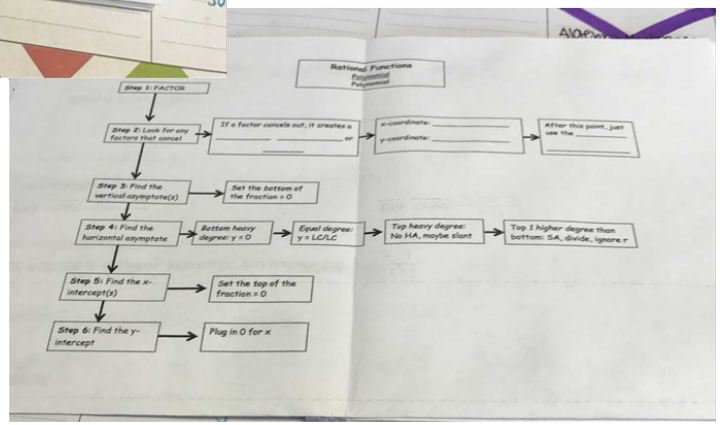
Step 5: Now glue the 2's together. Again, keep the folds on the same side.

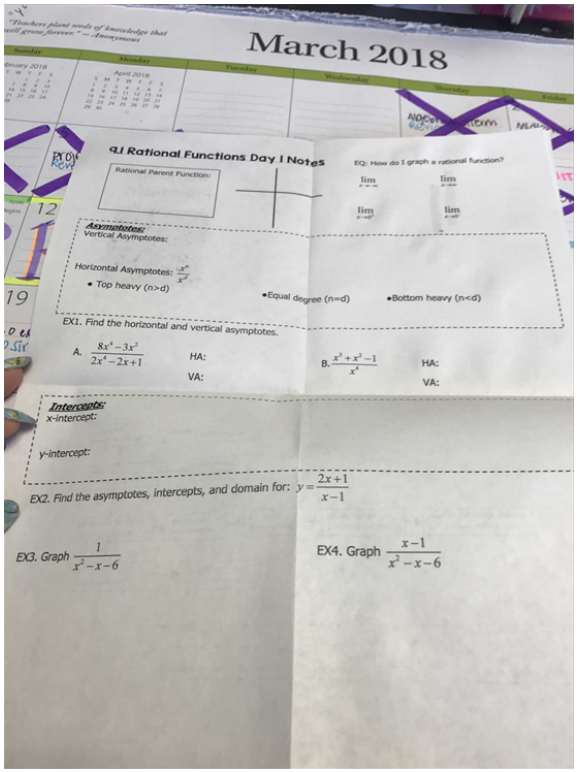


Step 6: Last thing! Reinforce the spine by using masking tape & folding it over.









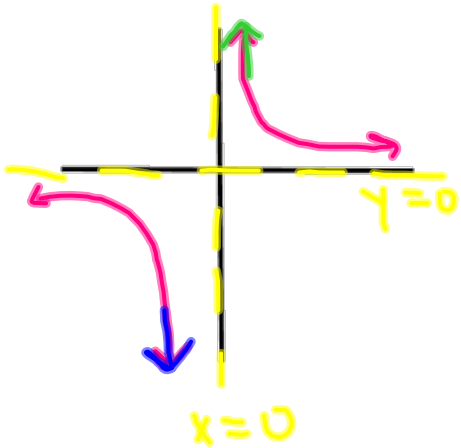
These are your notes for the entire unit! Write your name on it and keep it safe!!!

9.1 Rational Functions Day 1

EQ: How do I graph a rational function?

Rational Parent Function:

$y = \frac{1}{x}$



end behavior HA

$\lim_{x \to -\infty} 0$ $\lim_{x \to \infty} 0$

$\lim_{x \to 0^+} \infty$ Right

$\lim_{x \to 0^-} -\infty$ Left

9.1 Rational Functions Day 1

EQ: How do I graph a rational function?

Asymptotes:

Vertical Asymptotes: to find, set bottom equal to 0 $x = __$

can NEVER cross a V.A.

Horizontal Asymptotes: $\frac{x^n}{x^d}$ tells end behavior (can cross)

- Top heavy (n>d) high/low → no
- Equal degree (n=d) same/same → name $y = \frac{\text{LC}}{\text{LC}}$
- Bottom heavy (n<d) low/high $0 = y$

EX1. Find the horizontal and vertical asymptotes.

A. $\frac{8x^4 - 3x^2}{2x^4 - 2x + 1}$

HA: $y = \frac{8}{2}$ $y = 4$

VA: none

same/same name

$2x^4 - 2x + 1 = 0$

can't factor

B. $\frac{x^3 + x^2 - 1}{x^4}$

HA: $y = 0$

VA: $x = 0$

low/high

$\sqrt[4]{x^4} = \sqrt[4]{0}$

$x = 0$

9.1 Rational Functions Day 1

EQ: How do I graph a rational function?

Intercepts:

x-intercept: set top=0 (#, 0)
zero
root

y-intercept: plug in x=0 (0, #)

EX2. Find the asymptotes, intercepts, and domain for: $y = \frac{2x+1}{x-1}$

HA: same same name

VA: x-1=0
x=1

x-int 2x+1=0
-1 -1
$\frac{2x}{2} = \frac{-1}{2}$

y-int $\frac{2(0)+1}{0-1}$

HA: y = 2/1

VA: x=1

x-int: (-½, 0)

y-int: (0, -1)

domain: bottom=0
$(-\infty, 1) \cup (1, \infty)$

9.1 Rational Functions Day 1

EQ: How do I graph a rational function?

EX3. Graph $\frac{1}{x^2 - x - 6}$

FACTOR FIRST

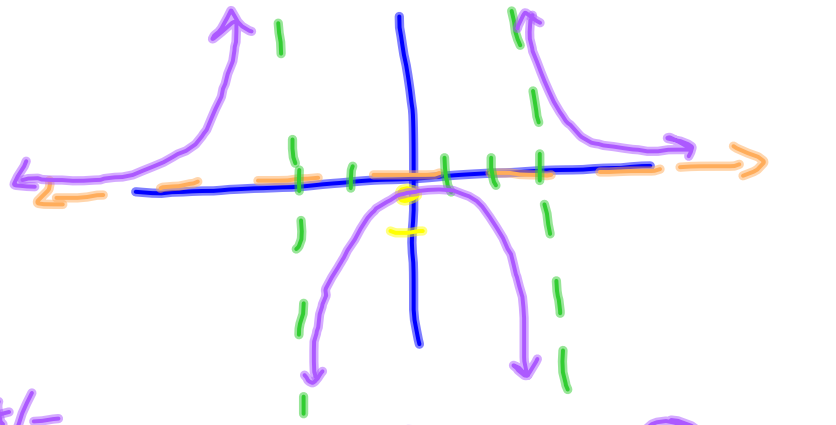
$\frac{1}{(x-3)(x+2)}$

HA: $\frac{0}{2}$ low/high $y=0$

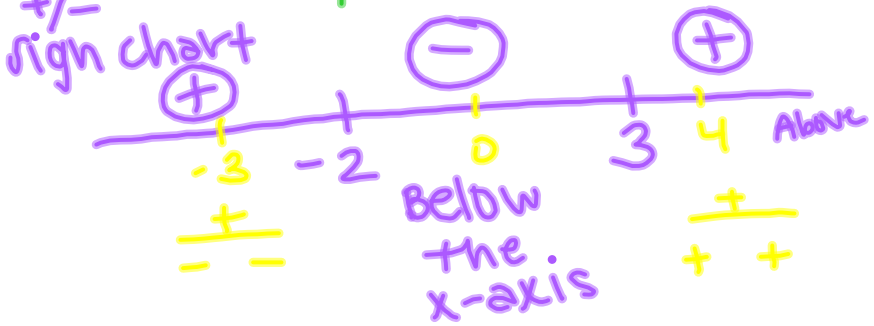
VA: $x-3=0$ $x=3$ $x+2=0$ $x=-2$

x-int: $1 \neq 0$ none

y-int: $\frac{1}{-6}$ $(0, -1/6)$



+/- sign chart



9.1 Rational Functions Day 1

EQ: How do I graph a rational function?

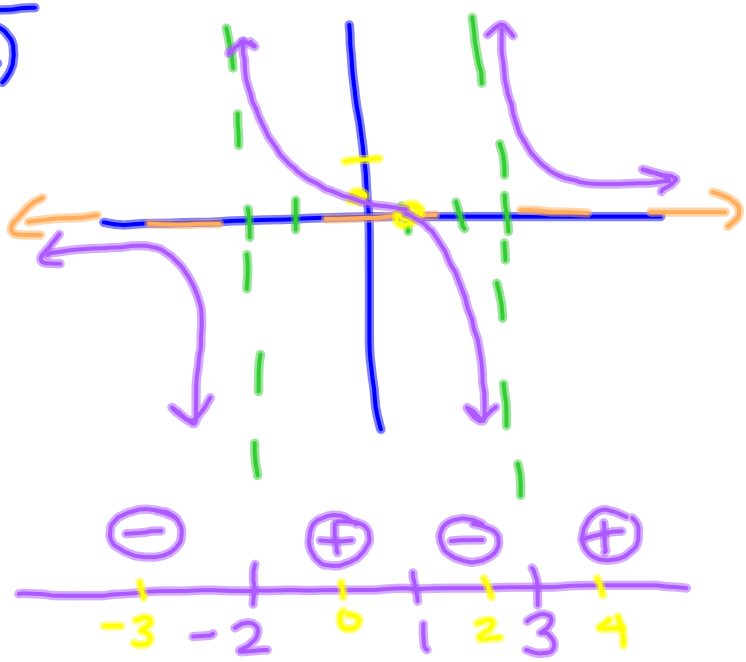
EX4. Graph $\frac{x-1}{x^2-x-6}$ = $\frac{x-1}{(x-3)(x+2)}$

HA: $\frac{\text{low}}{\text{high}}$ $0=y$

VA: $x=3$ $x=-2$

x-int: $x-1=0$, $x=1$ $(1,0)$

y-int: $(0, 1/6)$



9.1 Rational Functions Day 1

EQ: How do I graph a rational function?

Exit Ticket

on google classroom

9.1 Graphing Rational Functions Day 1 Name _____

For #1-9, find the domain and any vertical or horizontal asymptotes.

1. $f(x)=\frac{3}{x-5}$

2. $f(x)=\frac{2}{x^2}$

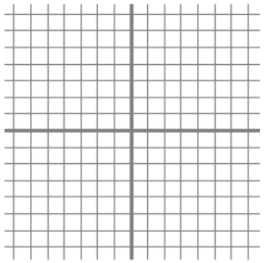
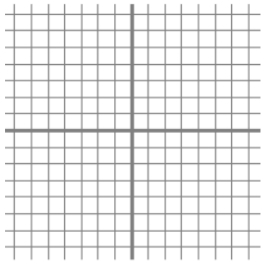
3. $f(x)=\frac{1}{x}-6$

4. $f(x)=\frac{3}{4+3x}$

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

6. $f(x)=\frac{10x^2}{x^2-1}$

For #10-11, find the domain, VA, & HA and graph the function with their asymptotes.

10. $f(x)=\frac{x-3}{2x+5}$

11. $f(x)=\frac{2x-3}{5-3x}$