Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_REMEDIATION Rational Function Parts 1 Period\_\_\_\_\_\_\_\_\_

ALL ANSWERS ON FUTURE ASSIGNMENTS AND ASSESSMENTS MUST BE IN PROPER FORMAT

Lines are stated as lines and points are stated as points

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| BAD example1. $f\left(x\right)=\frac{x^{2}-4x}{3x^{2}-27}$

X intercept(s) 4Y intercept ???? or blankHorizontal asymptote $\frac{1}{3}$ Vertical asymptote 3 or -3 | GOOD example1. $f\left(x\right)=\frac{x^{2}-4x}{3x^{2}-27}=\frac{x(x-4)}{3(x-3)(x+3)}$

X intercept(s) (4,0) or (0,0)Y intercept (0,$0$)Horizontal asymptote y =$ \frac{1}{3}$  Vertical asymptote x = 3 or x = -3 |

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| To find the y intercept of any function 1. Evaluate the function at x = 0

To find the x intercepts of a rational function 1. Factor the numerator
2. Factor the denominator
3. Check to see if a hole is present FIRST
4. Cancel off any common terms
5. Set remaining factors from NUMERATOR equal to 0 and solve for x (these numbers are the x intercepts)
6. STATE as a POINT (x, 0)
 | To determine if a rational function has a hole 1. Factor both the numerator and denominator
2. Does the numerator and denominator have a factor that has a variable in common?
3. If YES on 2) then a hole is present on the graph of the rational function
4. If YES on 2) set canceled factor equal to zero and solve for x (this is the x of your hole and a domain restriction)
5. If YES on 2) replace x in NEW version of rational function with the solution you just found in 4)
 | To find vertical asymptotes of a rational function1. Factor the numerator
2. Factor the denominator
3. Check to see if a hole is present FIRST
4. Cancel off any common terms
5. Set remaining factors from DENMINATOR equal to 0 and solve for x (these numbers are the x values of the vertical asymptotes & domain restrictions)
6. STATE as an EQUATION x = \_\_\_\_
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| State the equation of the given line\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_State the intercept as a point \_\_\_\_\_\_\_\_ | State the equation of the given line\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_State the intercept as a point \_\_\_\_\_\_\_\_ | Vertical lines take the form X = some numberAll points on a vertical line take the form (fixed number, any number y)X = 0 special example = y axisHorizontal lines take the form y = some numberAll points on a vertical line take the form (any number x, fixed number)Y = 0 special example = x axis |

**ALL ANSWERS ON FUTURE ASSIGNMENTS AND ASSESSMENTS MUST BE IN PROPER FORMAT Lines are stated as lines and points are stated as points**

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| (if NONE, then state so)1. $f\left(x\right)=\frac{x^{2}-10x}{3x+30}$

X intercept(s) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Y intercept \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Horizontal asymptote \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Vertical asymptote \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Does this rational function have a hole? \_\_\_\_\_\_\_If this rational function has a hole, then state it \_\_\_\_\_\_\_\_\_1. $g\left(x\right)=\frac{5x+40}{x^{2}-64}$

X intercept(s) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Y intercept \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Horizontal asymptote \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Vertical asymptote \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Does this rational function have a hole? \_\_\_\_\_\_\_If this rational function has a hole, then state it \_\_\_\_\_\_\_\_\_1. $h\left(x\right)=\frac{-9x^{2}+36x}{x^{2}-36}$

X intercept(s) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Y intercept \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Horizontal asymptote \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Vertical asymptote \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Does this rational function have a hole? \_\_\_\_\_\_\_If this rational function has a hole, then state it \_\_\_\_\_\_\_\_\_ | 1. $j\left(x\right)=\frac{-6x-12}{2x+18}$

X intercept(s) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Y intercept \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Horizontal asymptote \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Vertical asymptote \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Does this rational function have a hole? \_\_\_\_\_\_\_If this rational function has a hole, then state it \_\_\_\_\_\_\_\_\_1. $k\left(x\right)=\frac{1-x}{x^{2}-2x+1}$

X intercept(s) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Y intercept \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Horizontal asymptote \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Vertical asymptote \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Does this rational function have a hole? \_\_\_\_\_\_\_If this rational function has a hole, then state it \_\_\_\_\_\_\_\_\_1. $m\left(x\right)=\frac{x^{3}+4x^{2}-12x}{2x^{2}-10x}$

X intercept(s) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Y intercept \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Horizontal asymptote \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Vertical asymptote \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Does this rational function have a hole? \_\_\_\_\_\_\_If this rational function has a hole, then state it \_\_\_\_\_\_\_\_\_1. $m\left(x\right)=\frac{x^{2}+10x-11}{x^{3}-121x}$

X intercept(s) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Y intercept \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Horizontal asymptote \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Vertical asymptote \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Does this rational function have a hole? \_\_\_\_\_\_\_If this rational function has a hole, then state it \_\_\_\_\_\_\_\_\_ |