Secondary Math III Name_____
Rational Functions/Asymptotes Period_____
Assignment 5.6

Determine the domain of each rational function:

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

2. $g(x)=\frac{3+x}{3-x}$

3. $h(x)=\frac{1}{x^2-16}$

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

Determine the vertical asymptotes:

5. $\frac{x^2-36}{x^2+3x-18}$

6. $\frac{12x}{x+5}$

7. $\frac{5x+10}{x^2-16}$

8. $\frac{x^2+8x+15}{x^2+4x-5}$

Determine the horizontal asymptotes:

9. $f(x)=\frac{x}{x+5}$

10. $g(x)=\frac{3+x}{3-x}$

11. $h(x)=\frac{1}{x^2-16}$

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

Determine the hole (if it exists) of each rational function:

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

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

15. $\frac{x^2-5x-14}{x^2+x-2}$

16. $\frac{x^2-9}{x+7}$

Find the x and y-intercepts of the graphs of the following functions:

17. $y = \dfrac{x-2}{2x+1}$

18. $f(x) = \dfrac{x}{x^2-1}$

19. $y = \dfrac{x-2}{x^2-2x+1}$

20. $f(x) = \dfrac{x^2-8x+12}{x^2+1}$

FIRST-Simplify the rational equation if possible. Then find all vertical asymptotes, horizontal asymptotes and holes (if they exist).

21. $f(x) = \dfrac{2x+1}{2x-1}$

VA:_____

HA:_____

Hole:_____

22. $f(x) = \dfrac{x}{x^2-4}$

VA:_____

HA:_____

Hole:_____

23. $y = \frac{x^2-2x}{x^2+x-6}$

VA:_____

HA:_____

Hole:_____

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

VA:_____

HA:_____

Hole:_____

25. $f(x) = \dfrac{2x^2-4x}{x^2-7x+10}$

VA:_____

HA:_____

Hole:_____

26. $y = \dfrac{x^2-5x-6}{x-6}$

VA:_____

HA:_____

Hole:_____

27. $g(x) = \dfrac{1}{x-3}$

VA:_____

HA:_____

Hole:_____

28. $f(x) = \dfrac{4x^2}{x^3-8x^2}$

VA:_____

HA:_____

Hole:_____

29. $y = \dfrac{x^2-3x-10}{2x^2-10x}$

VA:_____

HA:_____

Hole:_____