1. Does  $f(x) = \frac{x^3 - 2x^2 + 3}{x^2 - 1}$  have a slant asymptote?



2. Write a function with NO VERTICAL ASYMPTOTE

- 3. What is the coordinates of the hole for the function  $f(x) = \frac{x^2 4}{x^2 + 2x 8}$
- 4. What are the x-int, y-int, vertical asymptote and horizontal asymptote

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

VA:

HA:

- 5. What is the slant asymptote for  $g(x) = \frac{x^2 9x + 20}{x + 4}$ ?
- 6. Use problem #5 to find its x-intercepts and y-intercepts

x-int:\_\_\_\_\_\_ y-int:\_\_\_\_\_

7. 
$$f(x) = \frac{x+4}{x^2 - x - 20}$$

x-int:\_\_\_\_\_ y-int:\_\_\_\_

Vertical Asymptote: \_\_\_\_\_

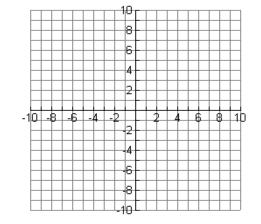
Horizontal Asymptote: \_\_\_\_\_

Slant Asymptote:

Holes: \_\_\_\_\_

Domain:

Range: \_\_\_\_\_



8. 
$$f(x) = \frac{2x-5}{x+4}$$

x-int:\_\_\_\_\_ y-int:\_\_\_\_\_

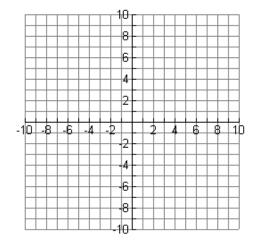
Vertical Asymptote: \_\_\_\_\_

Horizontal Asymptote: \_\_\_\_\_ Slant Asymptote: \_\_\_\_\_

Holes: \_\_\_\_\_

Domain: \_\_\_\_\_

Range: \_\_\_\_\_



9. Write a rational function that has a Vertical Asymptote at x = -3 and Horizontal Asymptote at y = 4.

10. Write a rational function that has Vertical Asymptotes at x = 1 and x = 2 and a Horizontal Asymptote at y = 2.

11. Find all the Asymptotes of  $g(x) = \frac{x^2 + 4x - 5}{x + 1}$ 

VA:\_\_\_\_

HA:

Slant:\_\_\_\_\_

- 12. Did #11 have any holes? If so, where is the hole?
- 13. Find all the Asymptotes of  $h(x) = \frac{2x^2 + 4x}{x^2 + 5x + 6}$

VA:\_\_\_\_

HA:\_\_\_\_\_

Slant:

y-int:\_\_\_\_

- 14. Did #13 have any holes? If so, where is the hole?
- 15. What is the x-intercept and y-intercept for  $h(x) = \frac{2x-9}{(x+3)(x-1)}$  x-int:

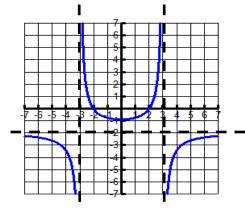
16. Find **horizontal** and **vertical** asymptotes of the rational function, **Domain**, **range**,

HA:\_\_\_\_

VA:\_\_\_\_\_

Domain:

Range:



17. Given  $g(x) = \frac{x^2 - 9}{3x^2 + 9x}$ , A. explain what is occurring at x = -3? B. W.

a.

b.\_\_\_\_