

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Find the vertical & horizontal asymptotes, x & y ints, holes, and domain & range. Graph when appropriate:**

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

Vert: \_\_\_\_\_ Hor: \_\_\_\_\_

x-Int.: \_\_\_\_\_ y-int: \_\_\_\_\_

hole: \_\_\_\_\_

D: \_\_\_\_\_ R: \_\_\_\_\_

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

Vert: \_\_\_\_\_ Hor: \_\_\_\_\_

x-Int.: \_\_\_\_\_ y-int: \_\_\_\_\_

hole: \_\_\_\_\_

D: \_\_\_\_\_ R: \_\_\_\_\_

3.  $f(x) = \frac{x^2 - 5x + 6}{x^2 - 4x + 3}$

Vert: \_\_\_\_\_ Hor: \_\_\_\_\_

x-Int.: \_\_\_\_\_ y-int: \_\_\_\_\_

hole: \_\_\_\_\_

D: \_\_\_\_\_ R: \_\_\_\_\_

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

Vert: \_\_\_\_\_ Hor: \_\_\_\_\_

x-Int.: \_\_\_\_\_ y-int: \_\_\_\_\_

hole: \_\_\_\_\_

D: \_\_\_\_\_ R: \_\_\_\_\_

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

Vert: \_\_\_\_\_ Hor: \_\_\_\_\_

x-Int.: \_\_\_\_\_ y-int: \_\_\_\_\_

hole: \_\_\_\_\_

D: \_\_\_\_\_ R: \_\_\_\_\_

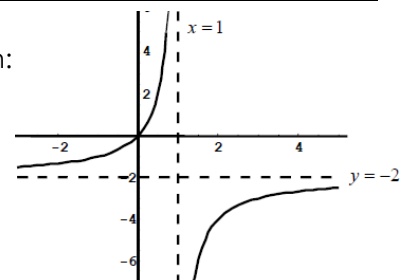
**Write a rational function with the following characteristics:**

6. vertical asymptotes of  $x = 1, x = -2$ .

7. vertical asymptote of  $x = -1$ , a horizontal asymptote of  $y = 2$  and a zero at  $x = 3$ .

8. vertical asymptotes of  $x = 0, x = \frac{5}{2}$  and horizontal asymptote of  $y = 2$ .

9. Using the graph:



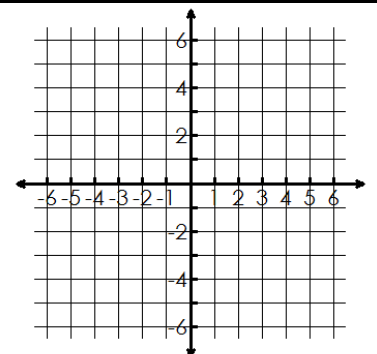
10.  $f(x) = \frac{x^3 + 3x^2}{x^3 + 3x^2 - 4x - 12}$

Vert: \_\_\_\_\_ Hor: \_\_\_\_\_

x-Int.: \_\_\_\_\_ y-int: \_\_\_\_\_

holes: \_\_\_\_\_

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



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

Vert: \_\_\_\_\_ Hor: \_\_\_\_\_

x-Int.: \_\_\_\_\_ y-int: \_\_\_\_\_

hole: \_\_\_\_\_

D: \_\_\_\_\_ R: \_\_\_\_\_

12.  $f(x) = \frac{3x-6}{x^2+x-6}$

Vert: \_\_\_\_\_ Hor: \_\_\_\_\_

x-Int.: \_\_\_\_\_ y-int: \_\_\_\_\_

hole: \_\_\_\_\_

D: \_\_\_\_\_ R: \_\_\_\_\_

13.  $f(x) = \frac{x^3}{x^2-1}$

Vert: \_\_\_\_\_ Hor: \_\_\_\_\_

x-Int.: \_\_\_\_\_ y-int: \_\_\_\_\_

hole: \_\_\_\_\_

D: \_\_\_\_\_ R: \_\_\_\_\_

14.  $f(x) = \frac{x^3 + x^2 - 12x}{4x^2 - 12x}$

Vert: \_\_\_\_\_ Hor: \_\_\_\_\_

x-Int.: \_\_\_\_\_ y-int: \_\_\_\_\_

hole: \_\_\_\_\_

D: \_\_\_\_\_ R: \_\_\_\_\_

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

Vert: \_\_\_\_\_ Hor: \_\_\_\_\_

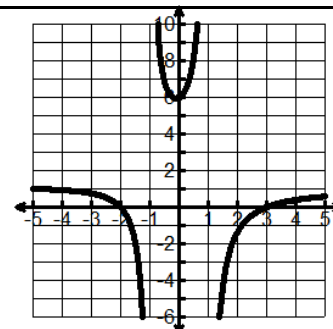
x-Int.: \_\_\_\_\_ y-int: \_\_\_\_\_

hole: \_\_\_\_\_

D: \_\_\_\_\_ R: \_\_\_\_\_

**Write a rational function with the following characteristics:**16. Vertical asymptotes of  $x = 0$  and  $x = \frac{4}{3}$   
and horizontal asymptote of  $y = -2$ 17. No vertical asymptotes and a y-intercept of  $(0,5)$ 

18. Using the graph:



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

Vert: \_\_\_\_\_ Hor: \_\_\_\_\_

x-Int.: \_\_\_\_\_ y-int: \_\_\_\_\_

hole: \_\_\_\_\_

D: \_\_\_\_\_ R: \_\_\_\_\_

