

Ch 4 Practice

Test

Answers !

For the following problems list the transformations, find the equations of the asymptotes, find the domain, range and sketch a graph.

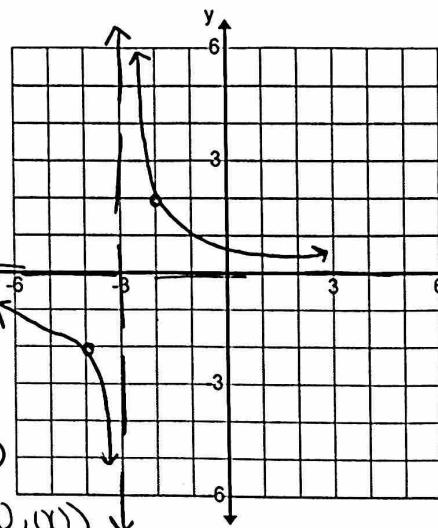
1. $y = \frac{2}{x+3}$

VD 2
L3

asym

$$y=0$$

$$x=-3$$

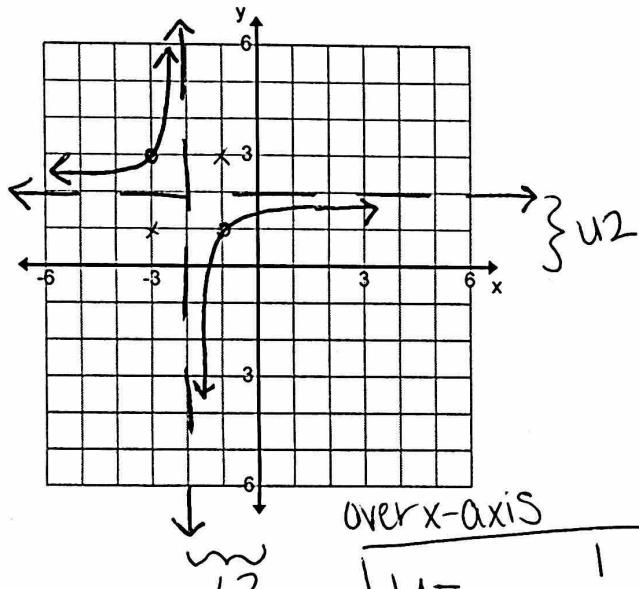


D: $(-\infty, -3) \cup (-3, \infty)$

R: $(-\infty, 0) \cup (0, \infty)$

Find the equations given the following graphs.

3.



over x-axis

$$y = -\frac{1}{x+2} + 2$$

5. Use $f(x) = \frac{x^2 - 5x - 14}{2x^2 - 11x + 12}$ to find the following pieces of the graph.

a. Vertical Asymptote(s):

$$\begin{aligned} 0c &= 24 \\ b &= -11 \end{aligned} \quad \left. \begin{array}{l} \{ -8, -3 \end{array} \right.$$

$$2x^2 - 8x - 3x + 12 = 0$$

$$2x(x-4) - 3(x-4) = 0$$

$$(2x-3)(x-4) = 0$$

c. X-intercept(s):

$$\begin{array}{l} x=4 \\ x=3 \end{array} | 2$$

$$x^2 - 5x - 14 = 0$$

$$(x-7)(x+2) = 0$$

$$x=7, x=-2$$

$$\begin{array}{l} (7, 0) \\ (-2, 0) \end{array}$$

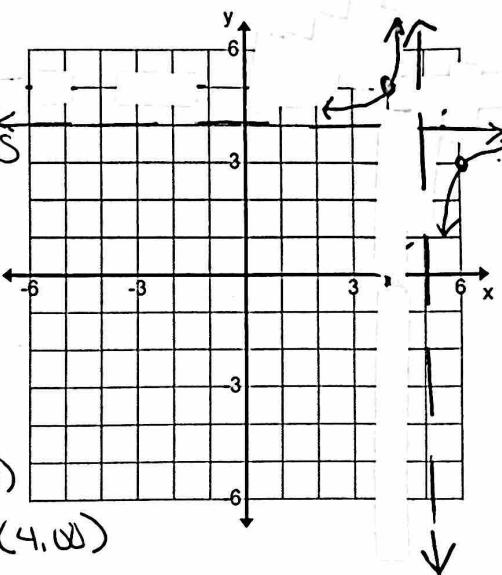
2. $y = -\frac{1}{x-5} + 4$

reflect over x-axis
R5, U4

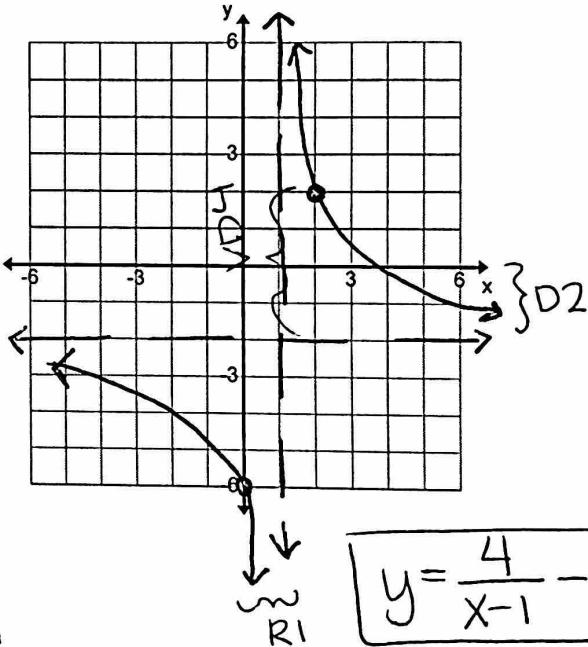
asym
 $y=4$
 $x=5$

D: $(-\infty, 5) \cup (5, \infty)$

R: $(-\infty, 4) \cup (4, \infty)$



4.



$$y = \frac{4}{x-1} - 2$$

b. Horizontal Asymptote:

same
same

$$y = \frac{1}{2}$$

d. Y-intercept(s):

$$\frac{0^2 - 5(0) - 14}{2(0)^2 - 11(0) + 12} = \frac{-14}{12} = -\frac{7}{6}$$

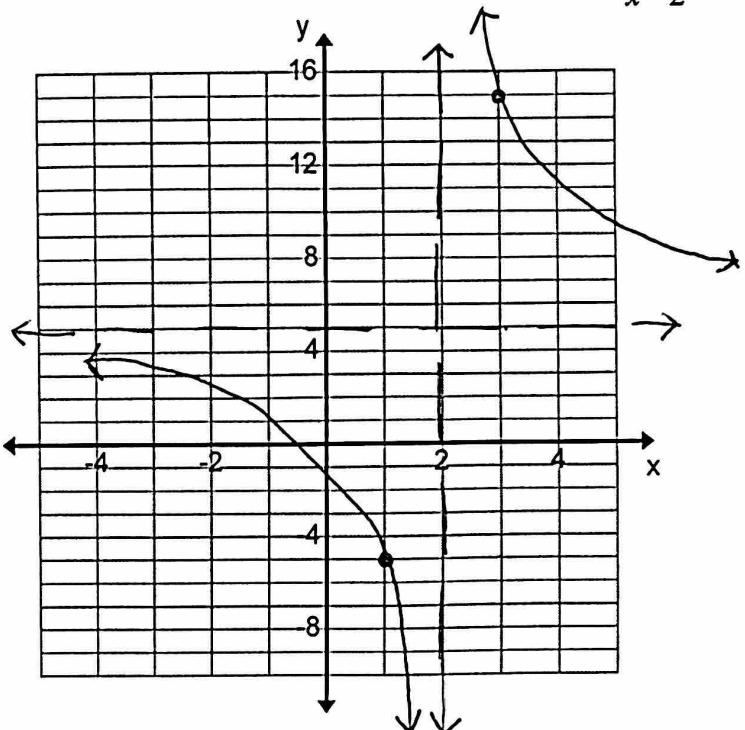
$$(0, -\frac{7}{6})$$

6. Use long division to rearrange the following equation & then graph it using transformations. $g(x) = \frac{5x}{x-2}$

$$\begin{array}{r} 5 \\ x-2 \overline{) 5x+0} \\ -5x+10 \\ \hline 10 \end{array}$$

$$y = \frac{10}{x-2} + 5$$

R2, U5, VD 10



7. Find all the key pieces of $f(x) = \frac{2x+5}{x-1}$ then graph the function.

a. Vertical Asymptote(s):

$$x-1=0$$

$$x=1$$

b. Horizontal Asymptote:

$$\frac{\text{Same}}{\text{Same}} \quad y=2$$

c. X-intercept(s):

$$2x+5=0$$

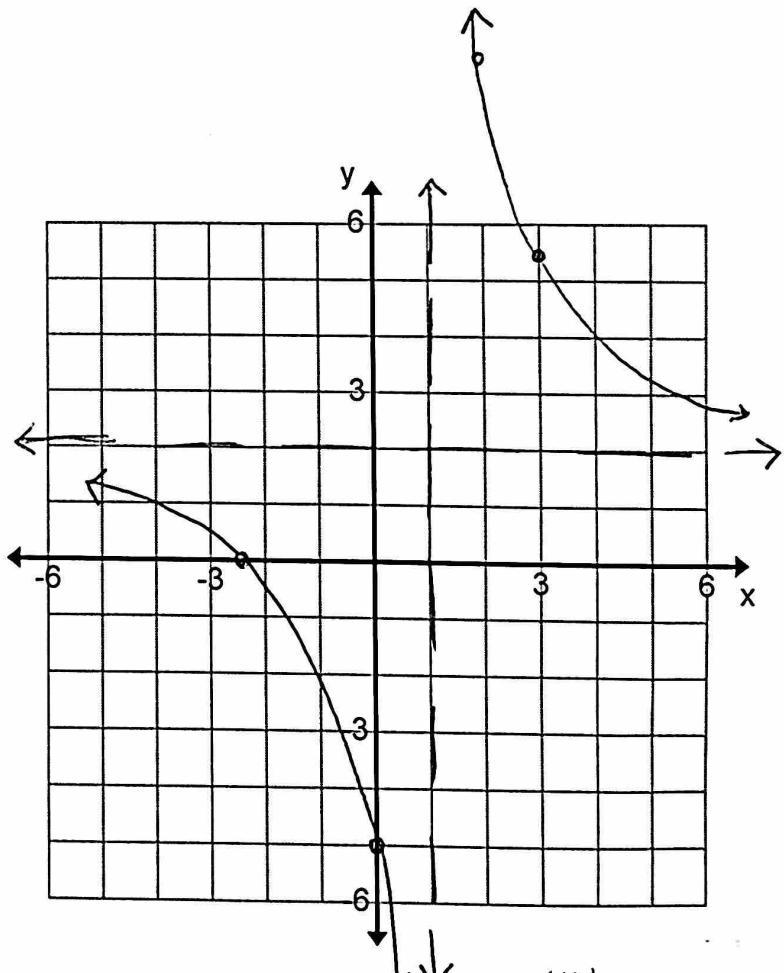
$$2x=-5 \quad (-5/2, 0)$$

$$x=-5/2$$

d. Y-intercept(s):

$$\frac{2(0)+5}{0-1} = -5/1 = -5$$

$$(0, -5)$$



$$\begin{array}{r} 14 \\ 2 \overline{) 9} \\ 3 \overline{) 5.5 \quad 1} \end{array}$$

In this equation find the following pieces of information: $f(x) = \frac{2x+1}{x^2 - 2x - 15}$

Vertical Asymptote(s)

$$x^2 - 2x - 15 = 0$$

$$(x-5)(x+3) = 0$$

$$x = 5 \quad x = -3$$

x-intercept(s)

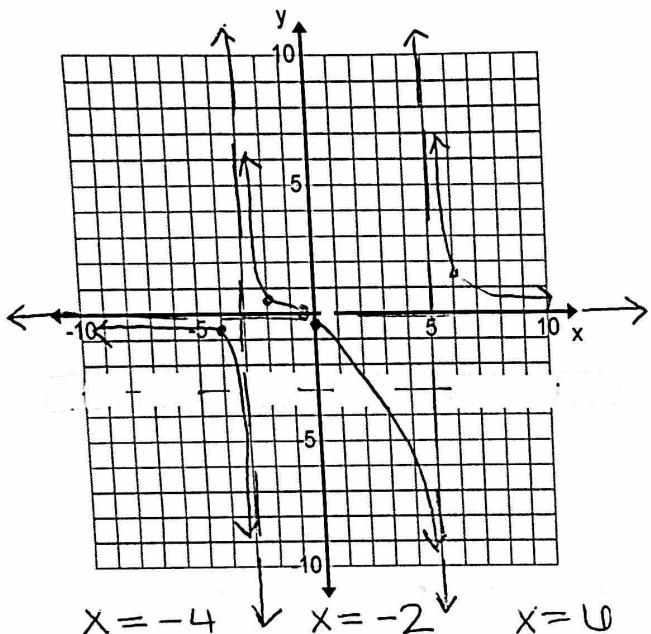
$$2x + 1 = 0$$

$$2x = -1$$

$$x = -\frac{1}{2}$$

$$(-\frac{1}{2}, 0)$$

Graph:



Horizontal Asymptote

small
big

$$y = 0$$

y-intercept(s)

$$\frac{2(0) + 1}{0^2 - 2(0) - 15} = -\frac{1}{15}$$

$$(0, -\frac{1}{15})$$

x	y
-4	-0.8
-2	0.4
0	1.4

9. Use long division to graph the following function: $f(x) = \frac{4x}{x+3}$

$$\begin{array}{r} 4 \\ x+3 \overline{)4x+0} \\ \quad -4x+12 \\ \hline \quad \quad \quad -12 \end{array}$$

a. List the transformations

over x-axis, L3, U4, VD12

b. State the domain

$$(-\infty, -3) \cup (-3, \infty)$$

c. State the range

$$(-\infty, 4) \cup (4, \infty)$$

