Graphing Simple Rational Functions

Date_____ Period____

Identify the vertical asymptotes, horizontal asymptote, domain, and range of each.

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

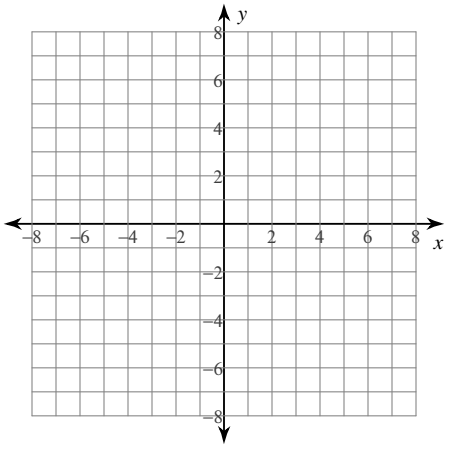
2) $f(x) = -\frac{4}{x-2} + 2$

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

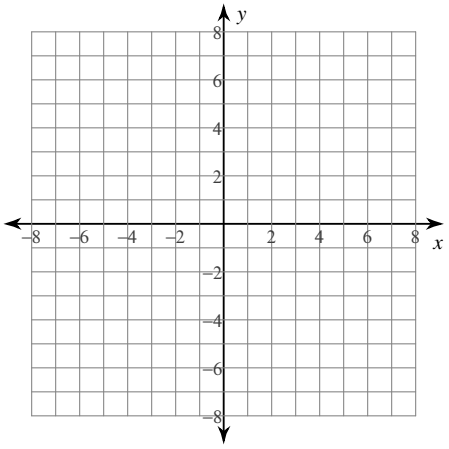
4) $f(x) = \frac{4}{x+1}$

Identify the vertical asymptotes, horizontal asymptote, domain, and range of each. Then sketch the graph.

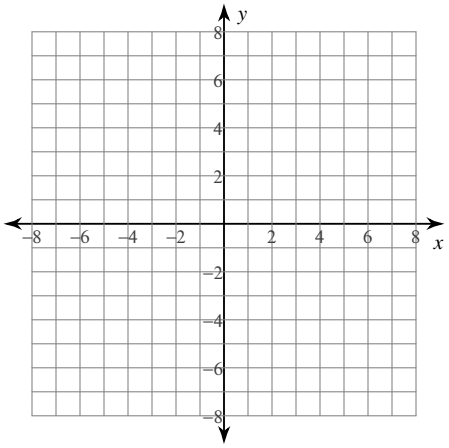
5) $f(x) = -\frac{1}{x-3} - 2$



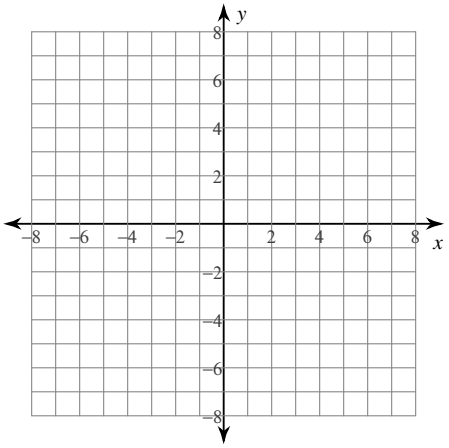
6) $f(x) = \frac{2}{x+3} - 2$



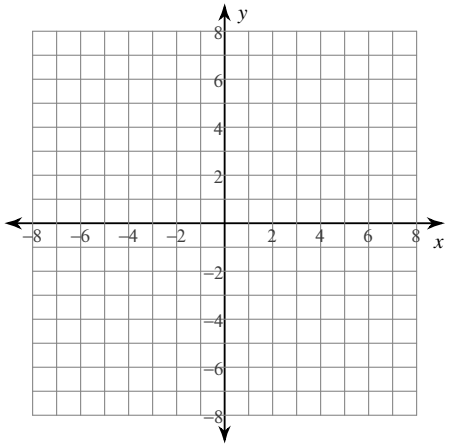
7) $f(x) = -\dfrac{3}{x-2} + 2$



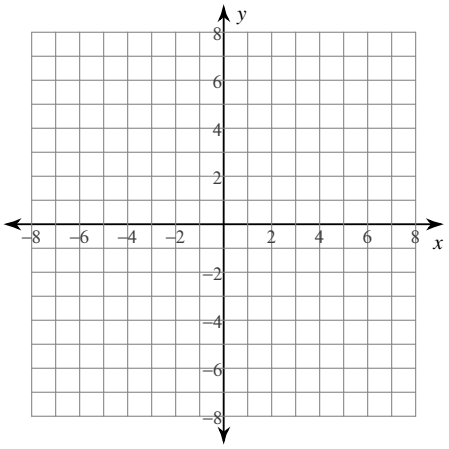
8) $f(x) = \dfrac{2}{x+3} - 3$



9) $f(x) = \dfrac{3}{x} + 2$



10) $f(x) = \dfrac{1}{x-4} + 1$



Critical thinking question:

11) Write a function of the form $f(x) = \dfrac{a}{x-h} + k$ with a vertical asymptote at $x = 25$

Graphing Simple Rational Functions

Date_____ Period____

Identify the vertical asymptotes, horizontal asymptote, domain, and range of each.

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

Vertical Asym.: $x = -2$
Horz. Asym.: $y = 1$
Domain: All reals except -2
Range: All reals except 1

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

Vertical Asym.: $x = 2$
Horz. Asym.: $y = 2$
Domain: All reals except 2
Range: All reals except 2

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

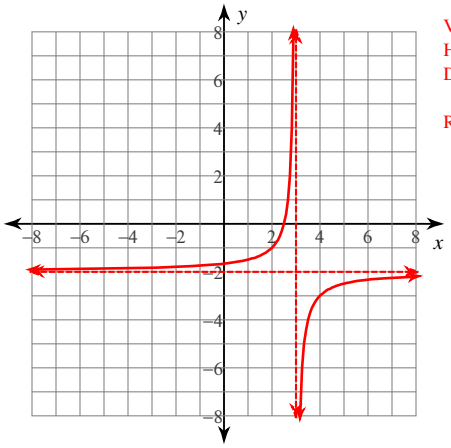
Vertical Asym.: $x = 0$
Horz. Asym.: $y = -2$
Domain: All reals except 0
Range: All reals except -2

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

Vertical Asym.: $x = -1$
Horz. Asym.: $y = 0$
Domain: All reals except -1
Range: All reals except 0

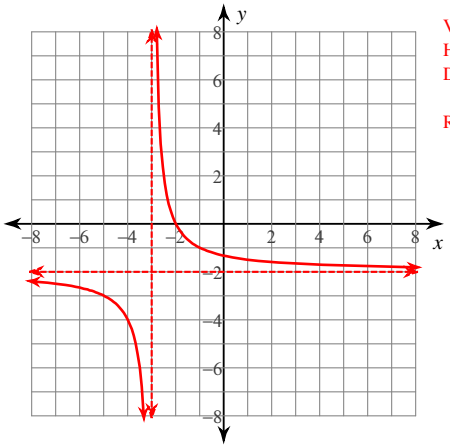
Identify the vertical asymptotes, horizontal asymptote, domain, and range of each. Then sketch the graph.

5) $f(x) = -\frac{1}{x-3} - 2$



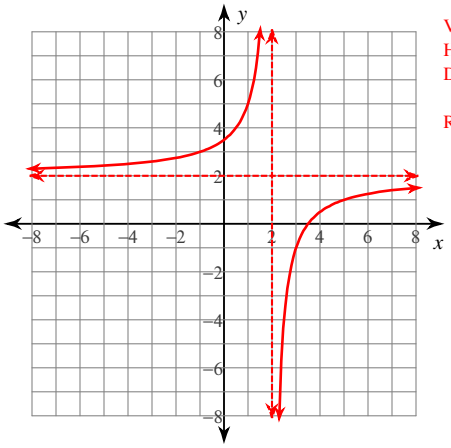
Vertical Asym.: $x = 3$
Horz. Asym.: $y = -2$
Domain:
All reals except 3
Range:
All reals except -2

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



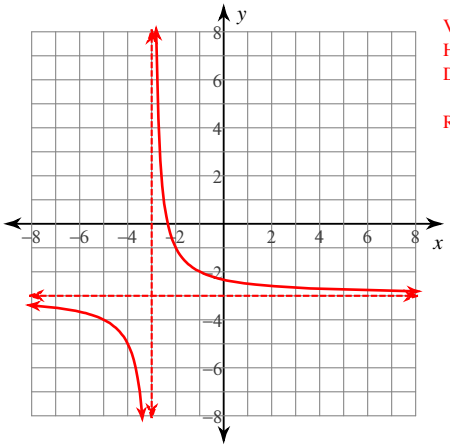
Vertical Asym.: $x = -3$
Horz. Asym.: $y = -2$
Domain:
All reals except -3
Range:
All reals except -2

7) $f(x) = -\dfrac{3}{x-2} + 2$



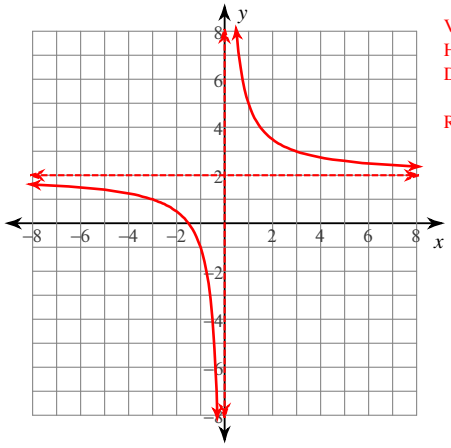
Vertical Asym.: $x = 2$
Horz. Asym.: $y = 2$
Domain:
All reals except 2
Range:
All reals except 2

8) $f(x) = \dfrac{2}{x+3} - 3$



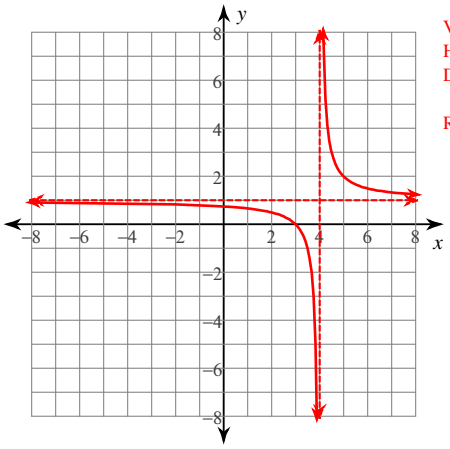
Vertical Asym.: $x = -3$
Horz. Asym.: $y = -3$
Domain:
All reals except -3
Range:
All reals except -3

9) $f(x) = \dfrac{3}{x} + 2$



Vertical Asym.: $x = 0$
Horz. Asym.: $y = 2$
Domain:
All reals except 0
Range:
All reals except 2

10) $f(x) = \dfrac{1}{x-4} + 1$



Vertical Asym.: $x = 4$
Horz. Asym.: $y = 1$
Domain:
All reals except 4
Range:
All reals except 1

Critical thinking question:

11) Write a function of the form $f(x) = \dfrac{a}{x-h} + k$ with a vertical asymptote at $x = 25$

Many answers. Ex: $f(x) = \dfrac{1}{x-25}$