

Quiz Review

Graph each of the following. State both the vertical and horizontal asymptote, domain and range (in interval notation), roots and y-intercepts.

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

Vert. Asymptote: _____

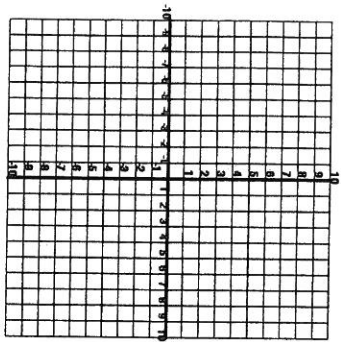
Horiz. Asymptote: _____

Domain: _____

Range: _____

Roots: _____

y-intercept: _____



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

Vert. Asymptote: _____

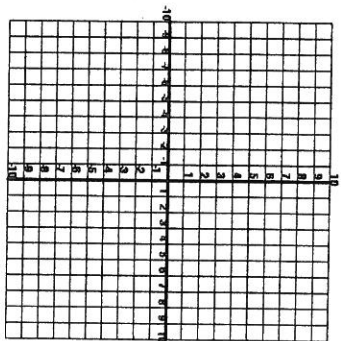
Horiz. Asymptote: _____

Domain: _____

Range: _____

Roots: _____

y-intercept: _____



3. Write a rational function that has a horizontal asymptote at $y = 0$ and vertical asymptotes at $x = 3$ and $x = -2$.

4. Write a rational function that has no horizontal asymptote, but has a vertical asymptote at $x = \frac{2}{3}$.

5. Write a rational function that has a hole at $x = -3$, horizontal asymptote at $y = 0$ and vertical asymptote at $x = 3$.

For the following rational function, determine the equations of all asymptotes, give holes, determine the x and y intercepts, and give the domain of the function. If "none", say "none". Asymptotes should be equations and holes/intercepts should be given as points.

6. $f(x) = \frac{x-5}{x^2-25}$

Vert: _____

Horiz: _____

Holes: _____

x-int: _____

y-int: _____

domain: _____

7. $f(x) = \frac{15x^2 - 7x - 2}{x^2 - 4}$

Vert: _____

Horiz: _____

Holes: _____

x-int: _____

y-int: _____

domain: _____

8. $f(x) = \frac{x^2 - 16}{x - 2}$

Vert: _____

Horiz: _____

Holes: _____

x-int: _____

y-int: _____

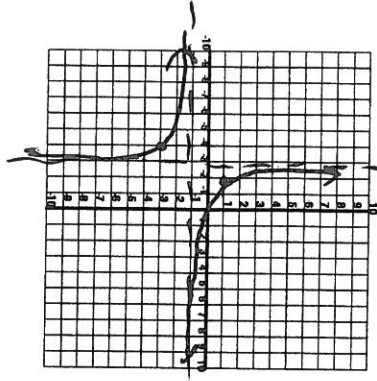
domain: _____

Key

Graph each of the following. State both the vertical and horizontal asymptote, domain and range (in interval notation), roots and y-intercepts.

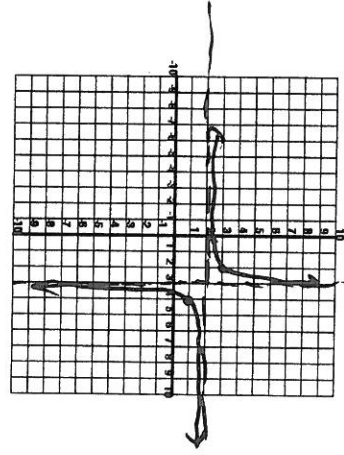
1. $f(x) = \frac{2}{x+2} - 1$

Vert Asymptote: $x = -2$
 Horiz Asymptote: $y = -1$
 Domain: $(-\infty, -2) \cup (-2, \infty)$
 Range: $(-\infty, -1) \cup (-1, \infty)$
 Roots: $(0, 0)$
 y-intercept: $(0, 0)$



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

Vert Asymptote: $x = 3$
 Horiz. Asymptote: $y = 2$
 Domain: $(-\infty, 3) \cup (3, \infty)$
 Range: $(-\infty, 2) \cup (2, \infty)$
 Roots: $(\frac{7}{2}, 0)$
 y-intercept: $(0, \frac{1}{3})$



3. Write a rational function that has a horizontal asymptote at $y = 0$ and vertical asymptotes at $x = 3$ and $x = -2$.

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

4. Write a rational function that has no horizontal asymptote, but has a vertical asymptote at $x = \frac{2}{3}$.

$y = \frac{x}{3x-2}$

5. Write a rational function that has a hole at $x = -3$, horizontal asymptote at $y = 0$ and vertical asymptote at $x = 3$.

$y = \frac{(x+3)}{(x+3)(x-3)}$

For the following rational function, determine the equations of all asymptotes, give holes, determine the x and y intercepts, and give the domain of the function. If "none", say "none". Asymptotes should be equations and holes/intercepts should be given as points.

6. $f(x) = \frac{x-5}{x^2-25}$

Vert: $x = -5$
 Horiz: $y = 0$
 Holes: $(5, \frac{1}{5})$
 x-int: none
 y-int: $(0, \frac{1}{5})$
 domain: $(-\infty, -5) \cup (-5, \infty)$

7. $f(x) = \frac{15x^2 - 7x - 2}{x^2 - 4}$

Vert: $x = 2$ $x = -2$
 Horiz: $y = 15$
 Holes: none
 x-int: $(\frac{2}{3}, 0)$ $(-\frac{1}{5}, 0)$
 y-int: $(0, \frac{1}{2})$
 domain: $(-\infty, -2) \cup (-2, 2) \cup (2, \infty)$

8. $f(x) = \frac{x^2-16}{x-2}$

Vert: $x = 2$
 Horiz: none
 Holes: none
 x-int: $(4, 0)$ $(-4, 0)$
 y-int: $(0, 8)$
 domain: $(-\infty, 2) \cup (2, \infty)$

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

condition of any
 , say "none".
 $(x-4)(x+4)$