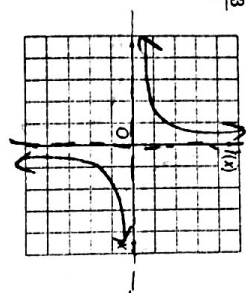


Graph each rational function. Identify any holes or asymptotes.

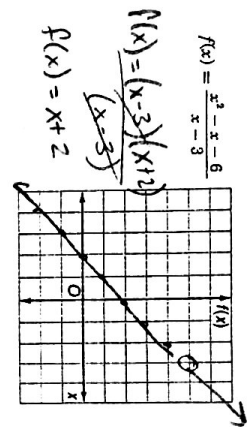
1. $f(x) = \frac{-3}{x}$



V.A. $x=0$
 holes None

2.

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



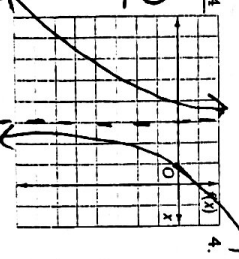
V.A. None
 holes (3, 2)

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

$f(x) = x + 2$

H.A. $y=0$

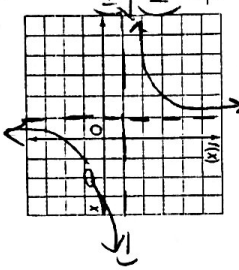
3. $f(x) = \frac{x^2 + 5x + 4}{x + 3}$



V.A. $x = -3$
 holes None

H.A. None

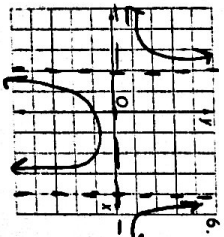
4. $f(x) = \frac{x^2 - 6x + 8}{x^2 - x - 2}$



V.A. $x = -1$
 holes (2, 4)

H.A. $y = 1$

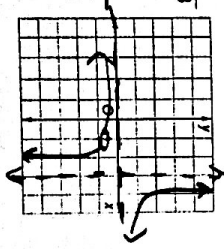
5. $f(x) = \frac{3}{x^2 - 2x - 8}$



V.A. $x = -2$ $x = 4$
 holes None

H.A. $y = 0$

6. $f(x) = \frac{x-1}{x^2 - 4x + 3}$



V.A. $x = 1$ $x = 3$
 holes (1, 1)

H.A. $y = 0$

Identify the horizontal asymptote for each rational function.

A. $y = \frac{x+2}{x-6}$

$y = 0$

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

$y = 1$

C. $y = \frac{(x+3)}{2(x+4)}$

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

D. $y = \frac{2x^2+3}{x^2-6}$

$y = 2$

E. $y = \frac{3x-12}{x^2-2}$

$y = 0$

F. $y = \frac{3x^3-4x+2}{2x^3+3}$

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

Identify any vertical asymptote and hole for each rational function.

A. $y = \frac{x}{(x+2)(x-2)}$

V.A. $x = -2$
 hole = (2, 1/4)

B. $y = \frac{x}{x(x-1)}$

V.A. $x = 1$
 hole (0, -1)

C. $y = \frac{x^2-2}{x+2}$

V.A. $x = -2$
 hole none

D. $y = \frac{x+3}{x^2-9}$

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

E. $y = \frac{(x-2)(2x+3)}{(5x+4)(x-3)}$

hole = none
 V.A. $x = -\frac{4}{5}$
 $x = 3$

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

hole = none
 V.A. $x = 1$

V.A. $x = 3$
 hole $x = (-3, \frac{1}{6})$