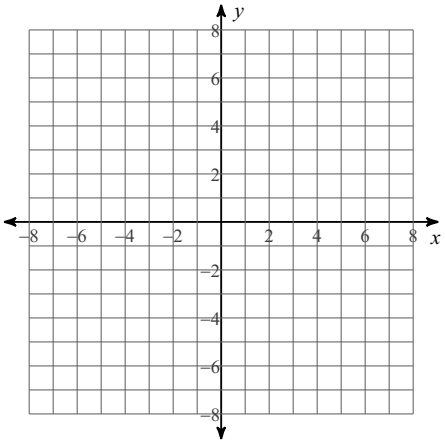
Pre-Calculus Name_____

Graphing Rational Functions 2

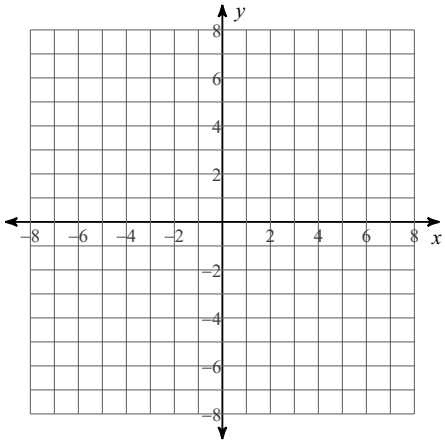
Date_____ Period____

Identify the holes, vertical asymptotes, x-intercepts, horizontal asymptote, and domain of each. Then sketch the graph.

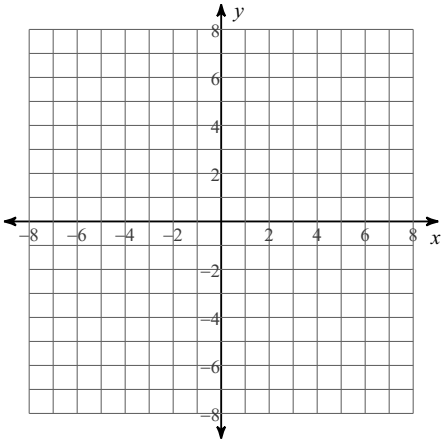
1) $f(x) = \dfrac{2}{x+1} + 2$



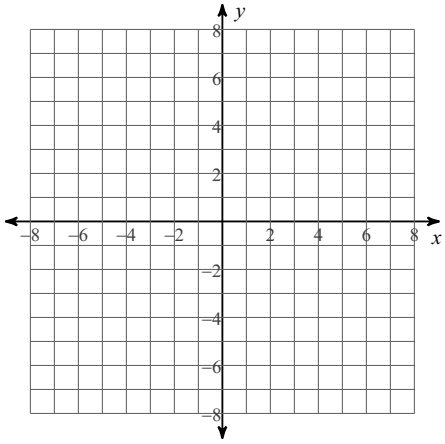
2) $f(x) = -\dfrac{1}{x+3}$



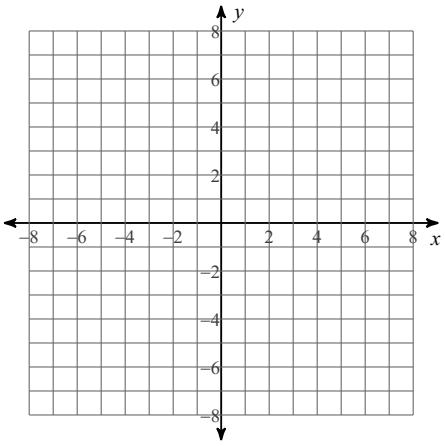
3) $f(x) = \dfrac{1}{-4x^2 + 12x}$



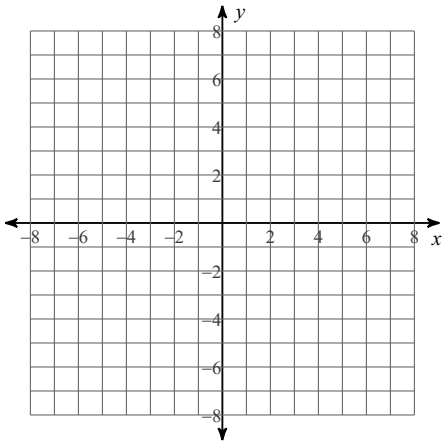
4) $f(x) = \dfrac{x^2 - 4x + 3}{2x^2 + 2x - 12}$



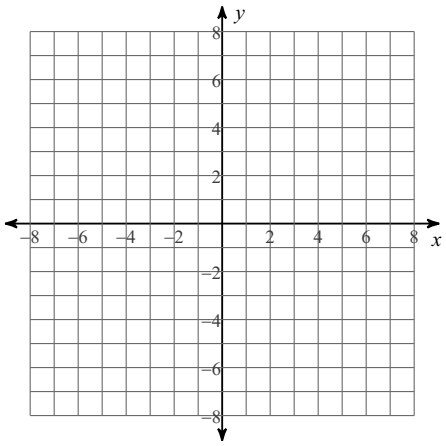
5) $f(x) = \dfrac{x}{4x^2 - 12x}$



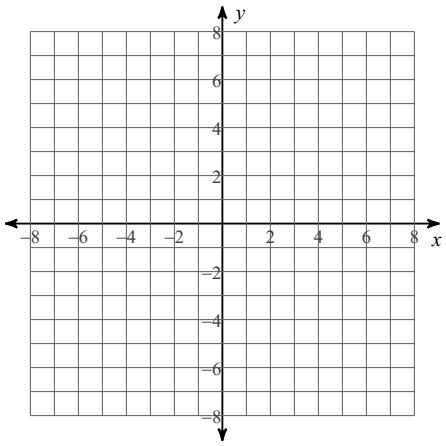
6) $f(x) = \dfrac{-x^2 + 16}{x^2 + x - 6}$



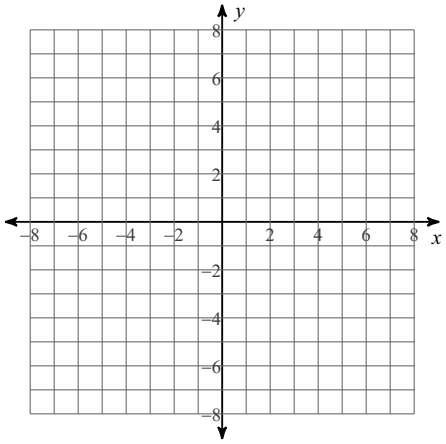
7) $f(x) = \dfrac{3x^2 - 48}{x^2 + 3x - 4}$



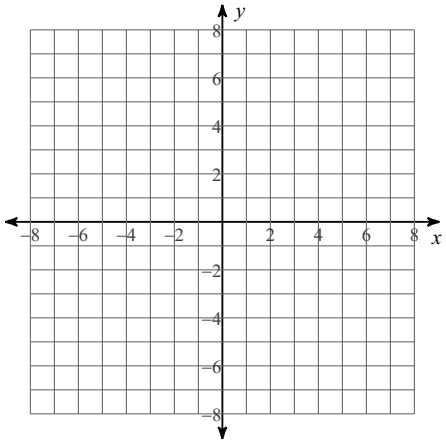
8) $f(x) = \dfrac{x^3 - 9x}{-3x^3 + 3x^2 + 6x}$



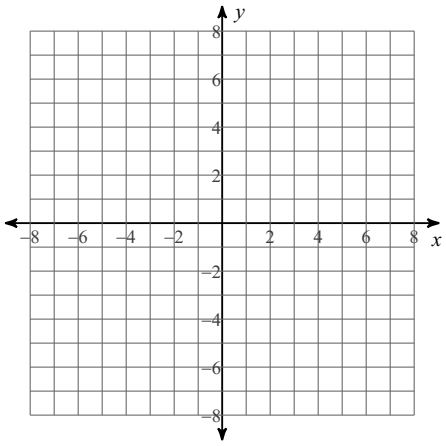
9) $f(x) = \dfrac{x^3 - 2x^2 - 3x}{-2x^2 + 4x}$



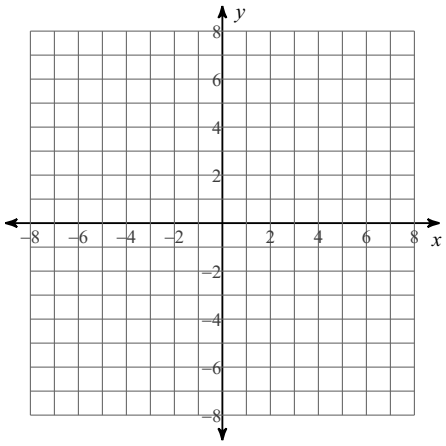
10) $f(x) = \dfrac{x^3 - 5x^2 + 6x}{4x^2 - 16x + 12}$



11) $f(x) = \dfrac{x^3 + x^2 - 12x}{-4x^2 - 4x + 8}$



12) $f(x) = \dfrac{x^3 + 2x^2 - 3x}{3x^2 - 12}$



Pre-Calculus

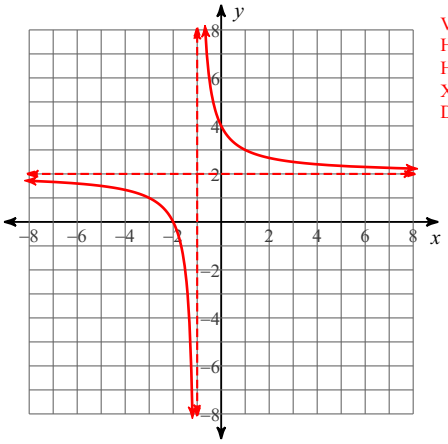
Name_____

Graphing Rational Functions 2

Date_____ Period____

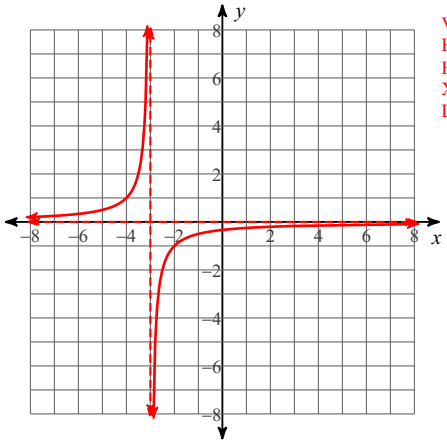
Identify the holes, vertical asymptotes, x-intercepts, horizontal asymptote, and domain of each. Then sketch the graph.

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



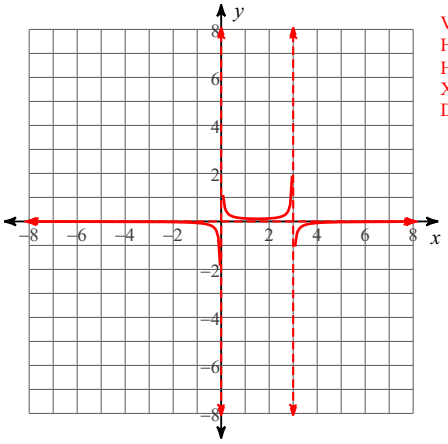
Vertical Asym.: $x = -1$
Holes: None
Horz. Asym.: $y = 2$
X-intercepts: -2
Domain:
All reals except -1

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



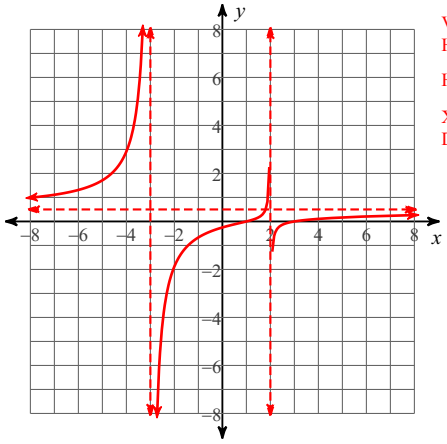
Vertical Asym.: $x = -3$
Holes: None
Horz. Asym.: $y = 0$
X-intercepts: None
Domain:
All reals except -3

3) $f(x) = \dfrac{1}{-4x^2 + 12x}$



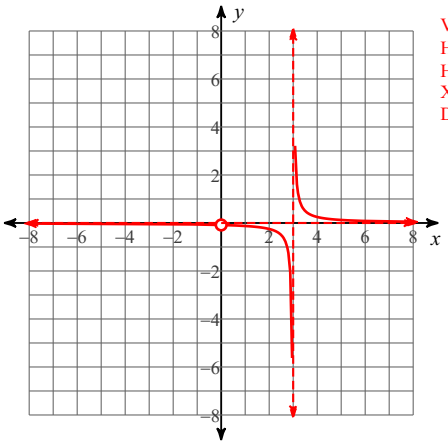
Vertical Asym.: $x = 0$, $x = 3$
Holes: None
Horz. Asym.: $y = 0$
X-intercepts: None
Domain:
All reals except 0, 3

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



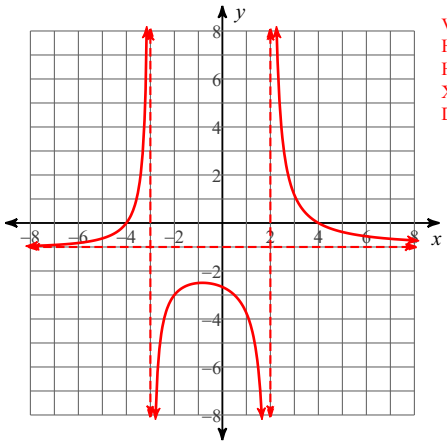
Vertical Asym.: $x = 2$, $x = -3$
Holes: None
Horz. Asym.: $y = \dfrac{1}{2}$
X-intercepts: 3, 1
Domain:
All reals except 2, -3

5) $f(x) = \dfrac{x}{4x^2 - 12x}$



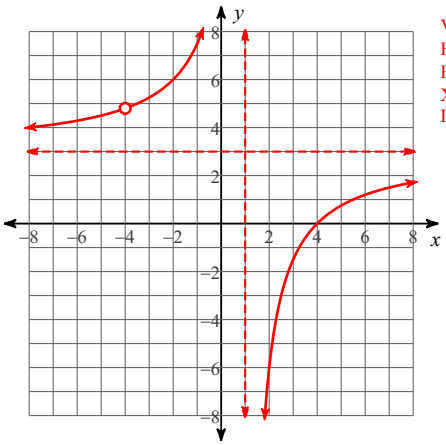
Vertical Asym.: $x = 3$
Holes: $x = 0$
Horz. Asym.: $y = 0$
X-intercepts: None
Domain:
All reals except 3, 0

6) $f(x) = \dfrac{-x^2 + 16}{x^2 + x - 6}$



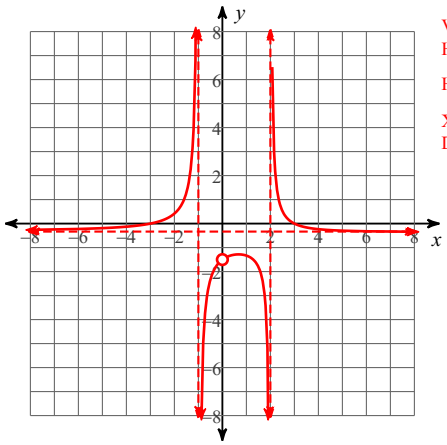
Vertical Asym.: $x = 2$, $x = -3$
Holes: None
Horz. Asym.: $y = -1$
X-intercepts: 4, -4
Domain:
All reals except 2, -3

7) $f(x) = \dfrac{3x^2 - 48}{x^2 + 3x - 4}$



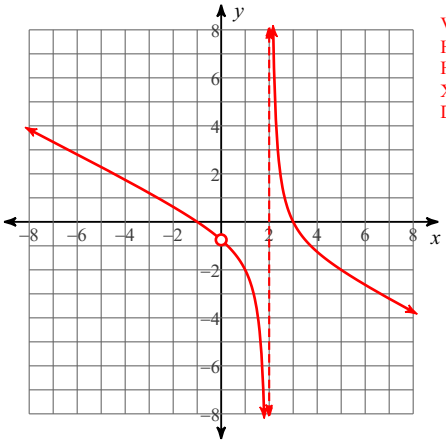
Vertical Asym.: $x = 1$
Holes: $x = -4$
Horz. Asym.: $y = 3$
X-intercepts: 4
Domain:
All reals except 1, –4

8) $f(x) = \dfrac{x^3 - 9x}{-3x^3 + 3x^2 + 6x}$



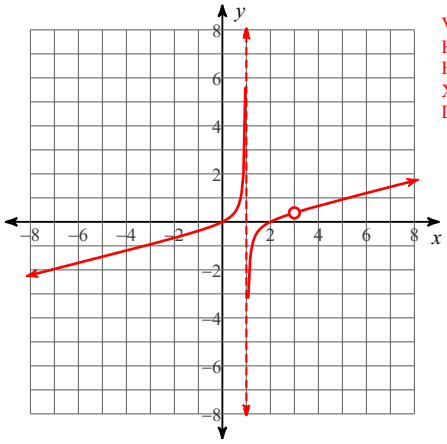
Vertical Asym.: $x = 2$, $x = -1$
Holes: $x = 0$
Horz. Asym.: $y = -\frac{1}{3}$
X-intercepts: 3, –3
Domain:
All reals except 2, –1, 0

9) $f(x) = \dfrac{x^3 - 2x^2 - 3x}{-2x^2 + 4x}$



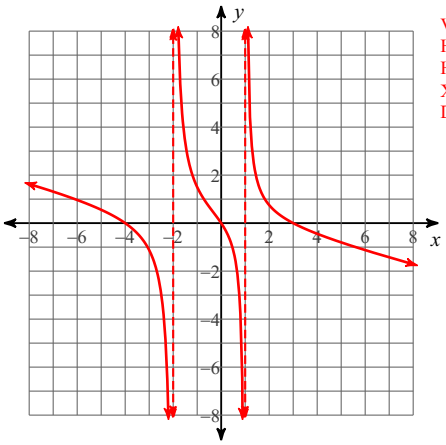
Vertical Asym.: $x = 2$
Holes: $x = 0$
Horz. Asym.: None
X-intercepts: 3, –1
Domain:
All reals except 2, 0

10) $f(x) = \dfrac{x^3 - 5x^2 + 6x}{4x^2 - 16x + 12}$



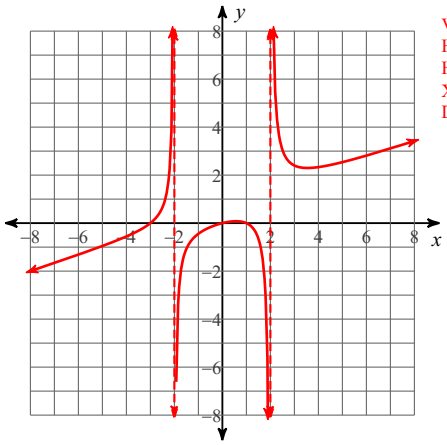
Vertical Asym.: $x = 1$
Holes: $x = 3$
Horz. Asym.: None
X-intercepts: 0, 2
Domain:
All reals except 1, 3

11) $f(x) = \dfrac{x^3 + x^2 - 12x}{-4x^2 - 4x + 8}$



Vertical Asym.: $x = 1$, $x = -2$
Holes: None
Horz. Asym.: None
X-intercepts: 0, 3, –4
Domain:
All reals except 1, –2

12) $f(x) = \dfrac{x^3 + 2x^2 - 3x}{3x^2 - 12}$



Vertical Asym.: $x = 2$, $x = -2$
Holes: None
Horz. Asym.: None
X-intercepts: 0, 1, –3
Domain:
All reals except 2, –2