Kuta Software - Infinite Algebra 2 Name_____

Graphing Rational Functions

Date_____ Period____

& Oblique Asymptotes

Identify the points of discontinuity, holes, vertical asymptotes, x-intercepts, and horizontal asymptote of each.

1) $f(x) = \dfrac{1}{3x^2 + 3x - 18}$

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

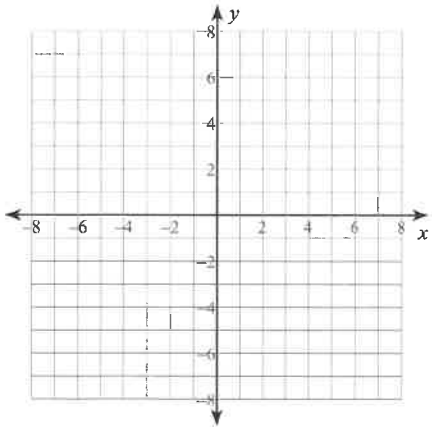
3) $f(x) = \dfrac{x^3 - x^2 - 6x}{-3x^2 - 3x + 18}$

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

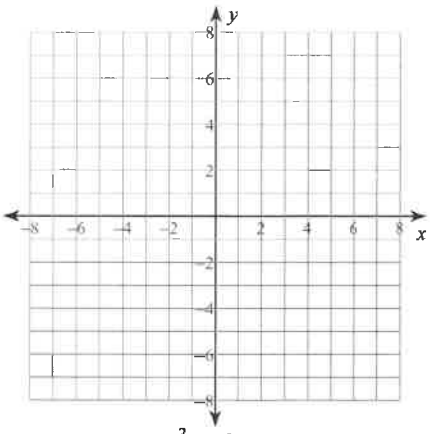
& Oblique Asymptotes

Identify the points of discontinuity, holes, vertical asymptotes, and horizontal asymptote of each. Then sketch the graph.

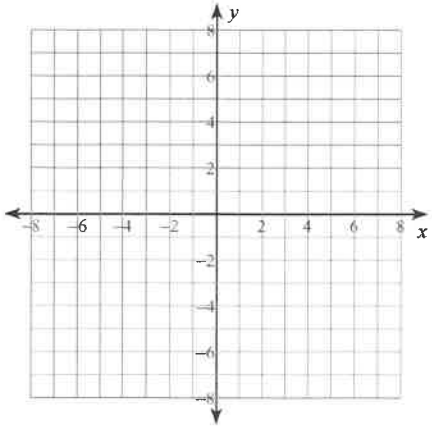
5) $f(x) = -\dfrac{4}{x^2 - 3x}$



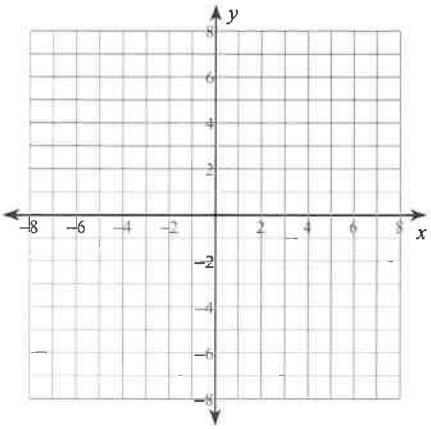
6) $f(x) = \dfrac{x - 4}{-4x - 16}$



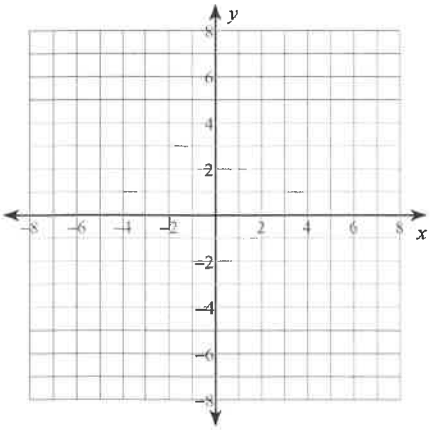
7) $f(x) = \dfrac{x + 4}{-2x - 6}$



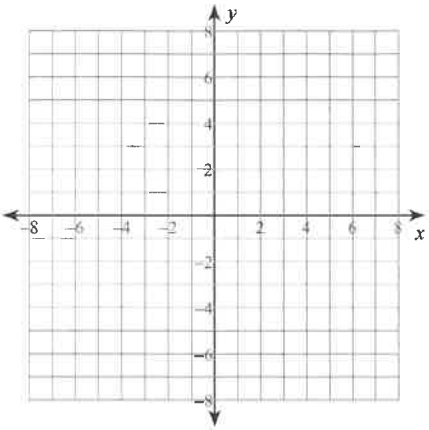
8) $f(x) = \dfrac{x^3 - 9x}{3x^2 - 6x - 9}$



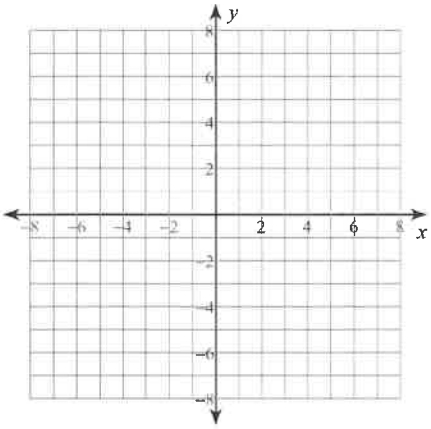
9) $f(x) = \dfrac{3x^2 - 12x}{x^2 - 2x - 3}$



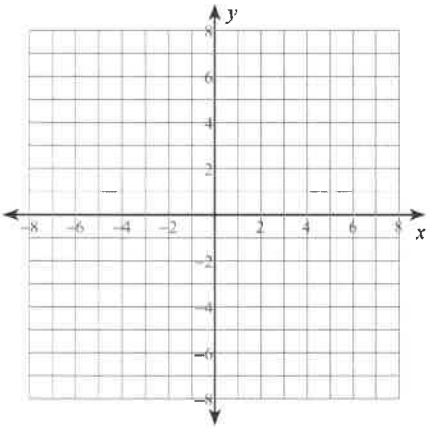
10) $f(x) = \dfrac{x^3 - 16x}{-4x^2 + 4x + 24}$



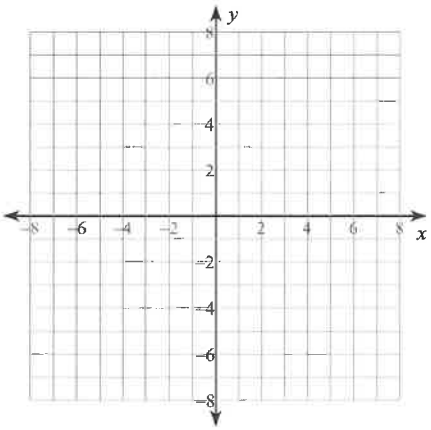
11) $f(x) = \dfrac{x^2 + 2x}{-4x + 8}$



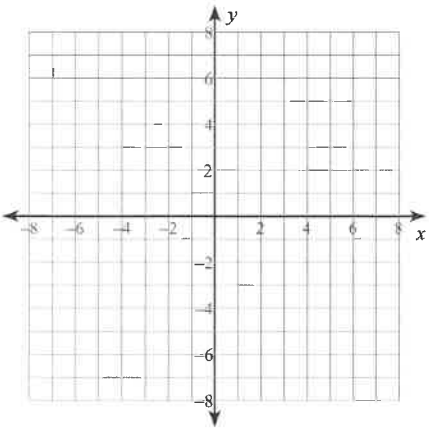
12) $f(x) = \dfrac{x + 2}{2x + 6}$



13) $f(x) = \dfrac{2x^2 + 10x + 12}{x^2 + 3x + 2}$



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



Kuta Software - Infinite Algebra 2

Name Key

Graphing Rational Functions

Date_____ Period____

Identify the points of discontinuity, holes, vertical asymptotes, x-intercepts, and horizontal asymptote of each.

1) $f(x) = \dfrac{1}{3x^2 + 3x - 18}$

Discontinuities: -3, 2
Vertical Asym.: $x = -3$, $x = 2$
Holes: None
Horz. Asym.: $y = 0$
X-intercepts: None

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

Discontinuities: 4
Vertical Asym.: $x = 4$
Holes: None
Horz. Asym.: $y = 1$
X-intercepts: 2

3) $f(x) = \dfrac{x^3 - x^2 - 6x}{-3x^2 - 3x + 18}$

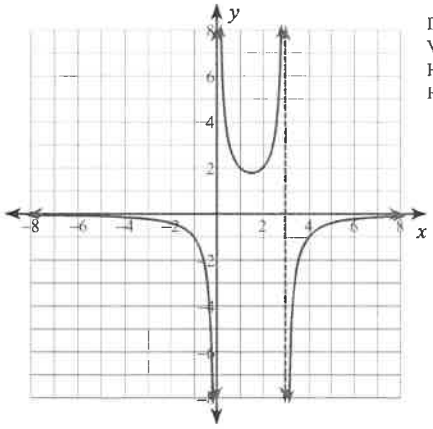
Discontinuities: 2, -3
Vertical Asym.: $x = 2$, $x = -3$
Holes: None
Horz. Asym.: None
X-intercepts: 0, -2, 3
O.A.: $y = -\frac{1}{3}x + \frac{2}{3}$

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

Discontinuities: -1, -3
Vertical Asym.: $x = -1$
Holes: $x = -3$
Horz. Asym.: $y = -\dfrac{1}{4}$
X-intercepts: 2

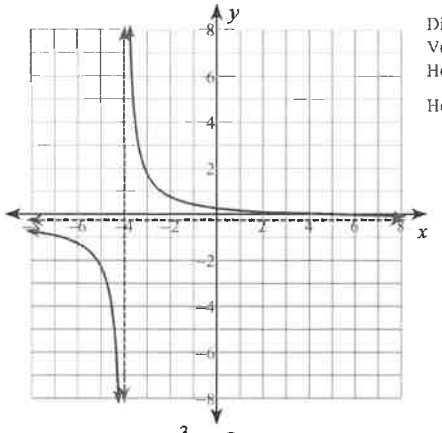
Identify the points of discontinuity, holes, vertical asymptotes, and horizontal asymptote of each. Then sketch the graph.

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



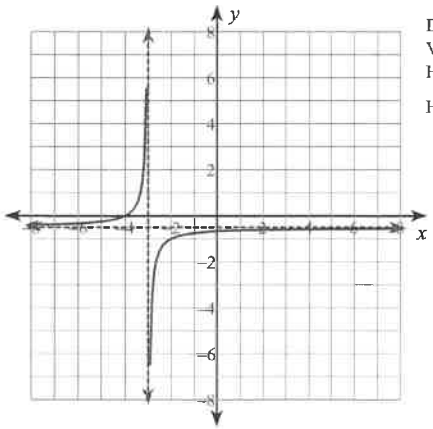
Discontinuities: 0, 3
Vertical Asym.: $x = 0$, $x = 3$
Holes: None
Horz. Asym.: $y = 0$

6) $f(x) = \dfrac{x - 4}{-4x - 16}$



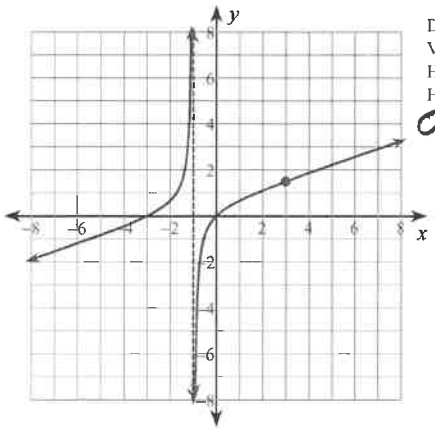
Discontinuities: -4
Vertical Asym.: $x = -4$
Holes: None
Horz. Asym.: $y = -\dfrac{1}{4}$

7) $f(x) = \dfrac{x + 4}{-2x - 6}$



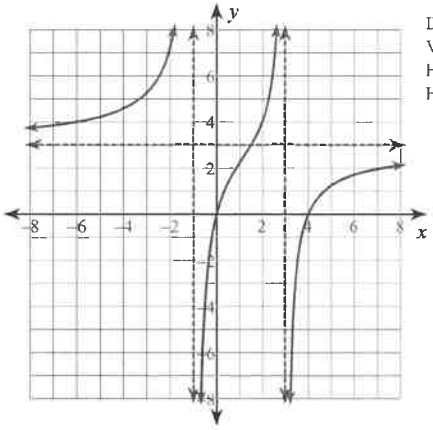
Discontinuities: -3
Vertical Asym.: $x = -3$
Holes: None
Horz. Asym.: $y = -\dfrac{1}{2}$

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



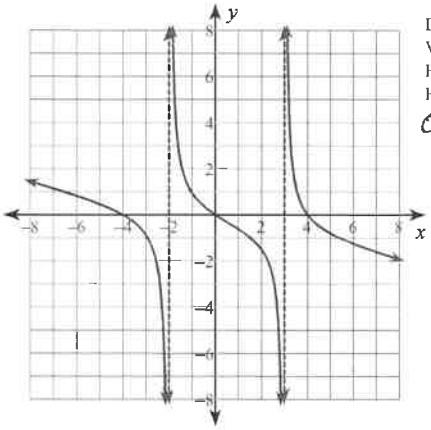
Discontinuities: -1, 3
Vertical Asym.: $x = -1$
Holes: $x = 3$
Horz. Asym.: None
O.A.: $y = \frac{1}{3}x + \frac{2}{3}$

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



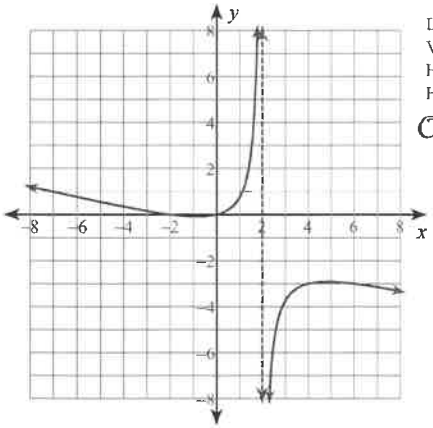
Discontinuities: -1, 3
Vertical Asym.: $x = -1$, $x = 3$
Holes: None
Horz. Asym.: $y = 3$

10) $f(x) = \dfrac{x^3 - 16x}{-4x^2 + 4x + 24}$



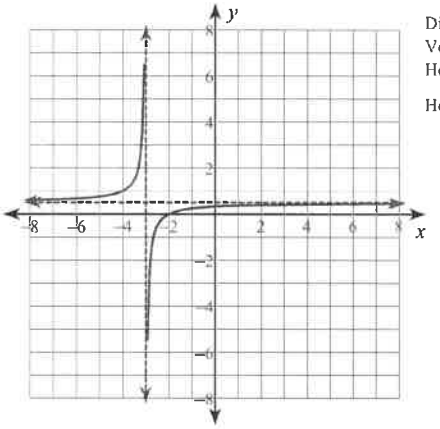
Discontinuities: 3, -2
Vertical Asym.: $x = 3$, $x = -2$
Holes: None
Horz. Asym.: None
O.A.: $y = -\frac{1}{4}x - \frac{1}{4}$

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



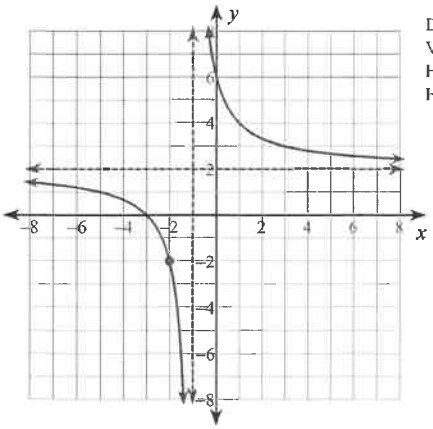
Discontinuities: 2
Vertical Asym.: $x = 2$
Holes: None
Horz. Asym.: None
O.A.: $y = -\frac{1}{4}x - 1$

12) $f(x) = \dfrac{x + 2}{2x + 6}$



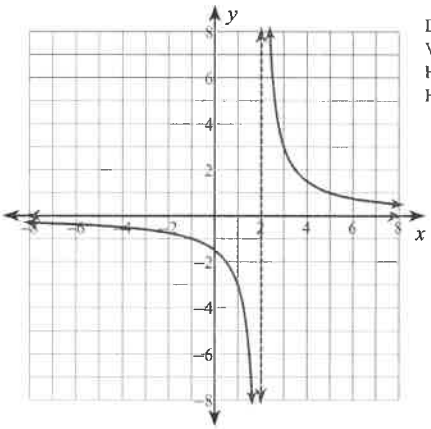
Discontinuities: -3
Vertical Asym.: $x = -3$
Holes: None
Horz. Asym.: $y = \frac{1}{2}$

13) $f(x) = \dfrac{2x^2 + 10x + 12}{x^2 + 3x + 2}$



Discontinuities: -1, -2
Vertical Asym.: $x = -1$
Holes: $x = -2$
Horz. Asym.: $y = 2$

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



Discontinuities: 2
Vertical Asym.: $x = 2$
Holes: None
Horz. Asym.: $y = 0$