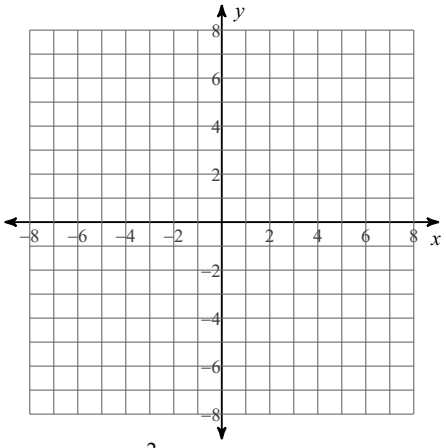
PreCalculus Name_____ ID: 1

Unit 2 Day 5 Graphing Rational Functions

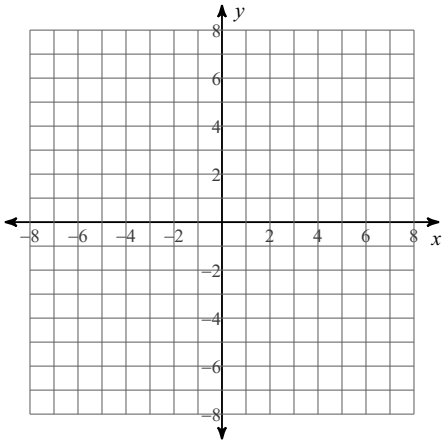
Date_____ Period____

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

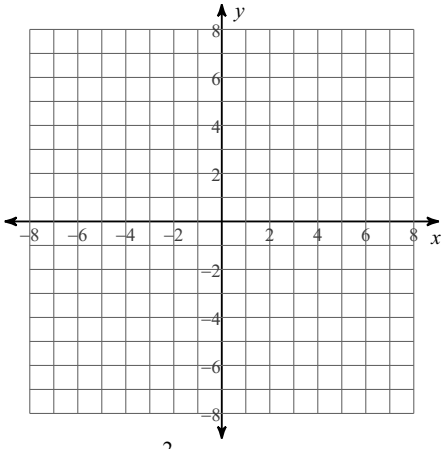
1) $f(x) = \dfrac{-x^3 - 2x^2}{x^3 - x^2 - 6x}$



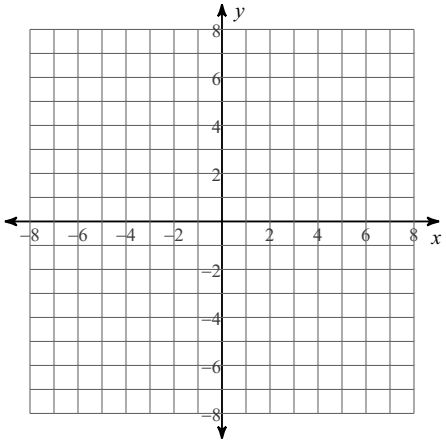
2) $f(x) = -\dfrac{1}{x - 3}$



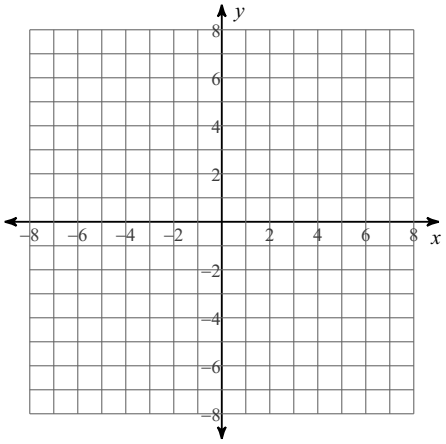
3) $f(x) = \dfrac{x^2 + 2x - 3}{x^2 + 5x + 6}$



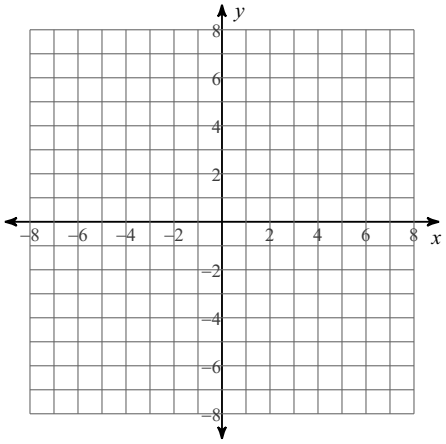
4) $f(x) = \dfrac{-x + 4}{x^2 - 16}$



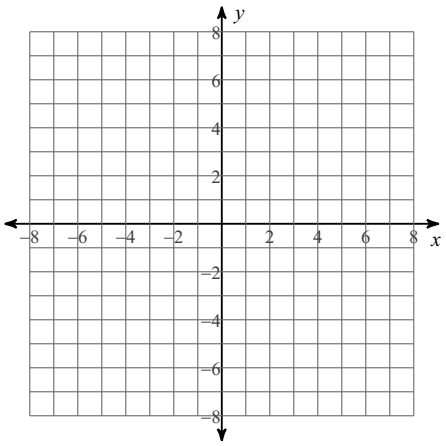
5) $f(x) = \dfrac{2x^2 - 2x}{x^2 + x}$



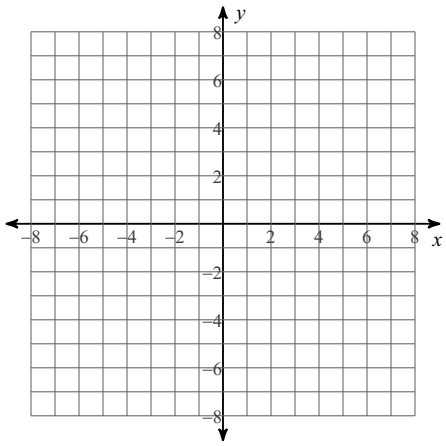
6) $f(x) = \dfrac{-3x - 12}{x + 3}$



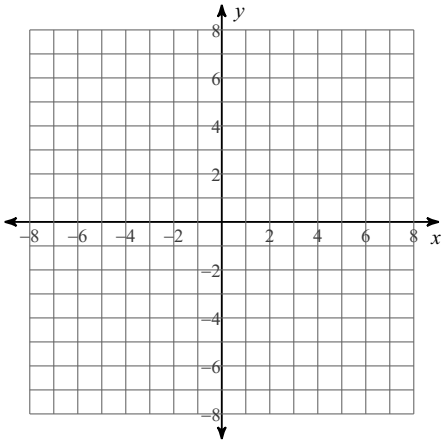
7) $f(x) = \dfrac{x^2 - 16}{2x^2 - 2x - 4}$



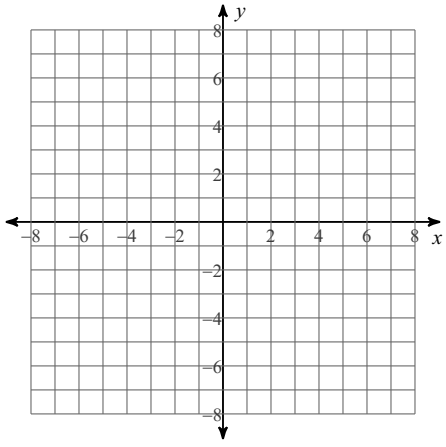
8) $f(x) = \dfrac{2x^2 - 4x - 16}{x^2 - 9}$



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



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



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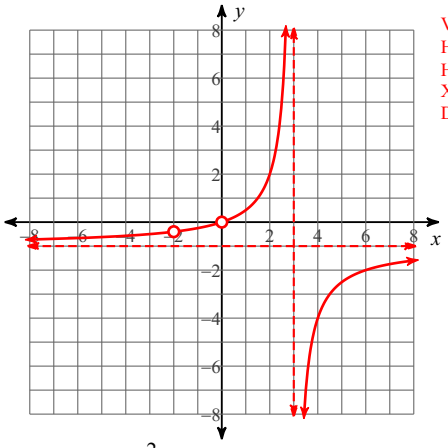
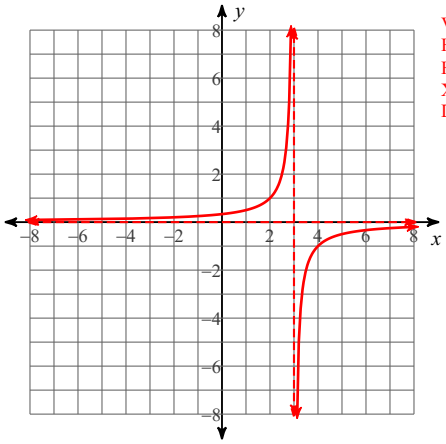


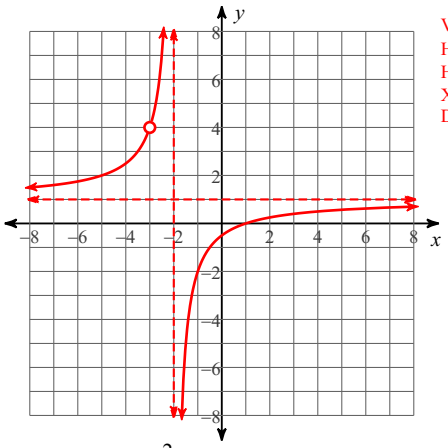
Vertical Asym.: $x = 3$
Holes: $x = 0$, $x = -2$
Horz. Asym.: $y = -1$
X-intercepts: None
Domain:
All reals except 3, 0, −2

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



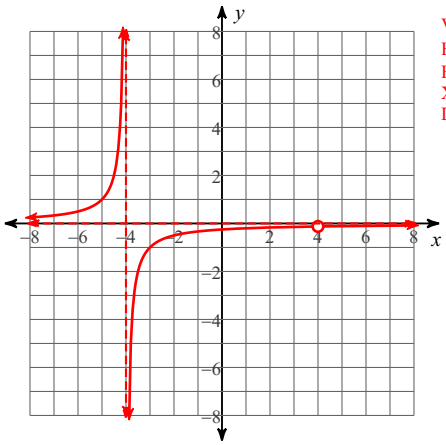
Vertical Asym.: $x = 3$
Holes: None
Horz. Asym.: $y = 0$
X-intercepts: None
Domain:
All reals except 3

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



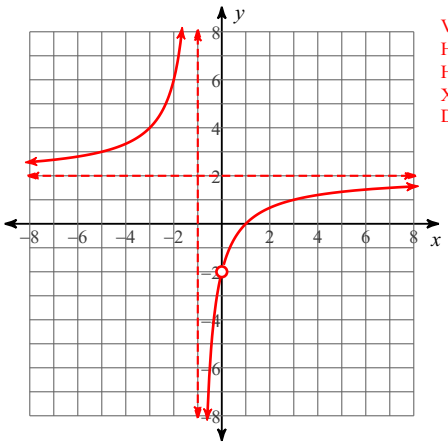
Vertical Asym.: $x = -2$
Holes: $x = -3$
Horz. Asym.: $y = 1$
X-intercepts: 1
Domain:
All reals except −2, −3

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



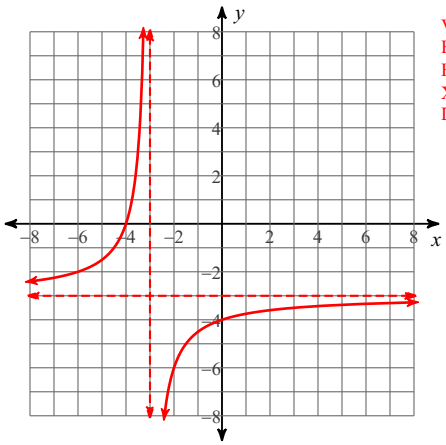
Vertical Asym.: $x = -4$
Holes: $x = 4$
Horz. Asym.: $y = 0$
X-intercepts: None
Domain:
All reals except −4, 4

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



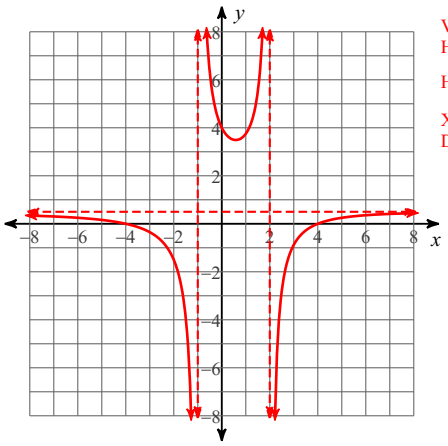
Vertical Asym.: $x = -1$
Holes: $x = 0$
Horz. Asym.: $y = 2$
X-intercepts: 1
Domain:
All reals except −1, 0

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



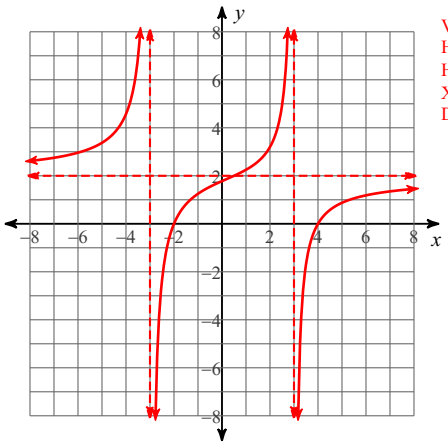
Vertical Asym.: $x = -3$
Holes: None
Horz. Asym.: $y = -3$
X-intercepts: −4
Domain:
All reals except −3

7) $f(x) = \dfrac{x^2 - 16}{2x^2 - 2x - 4}$



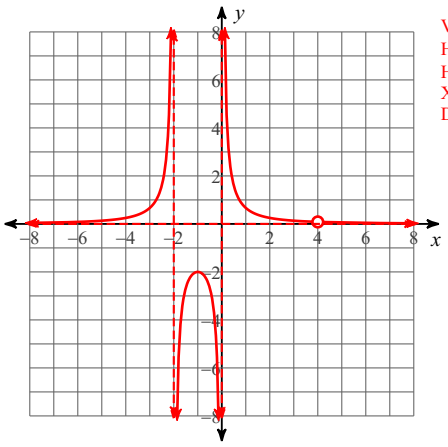
Vertical Asym.: $x = 2$, $x = -1$
Holes: None
Horz. Asym.: $y = \frac{1}{2}$
X-intercepts: 4, −4
Domain:
All reals except 2, −1

8) $f(x) = \dfrac{2x^2 - 4x - 16}{x^2 - 9}$



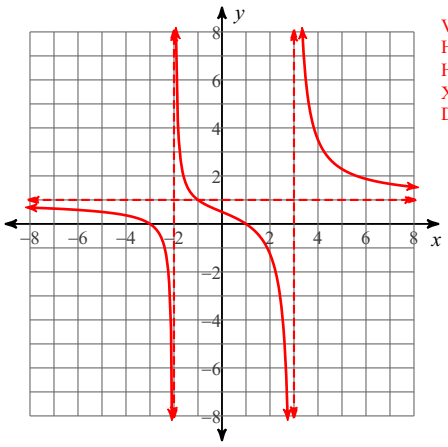
Vertical Asym.: $x = 3$, $x = -3$
Holes: None
Horz. Asym.: $y = 2$
X-intercepts: 4, −2
Domain:
All reals except 3, −3

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



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

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



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