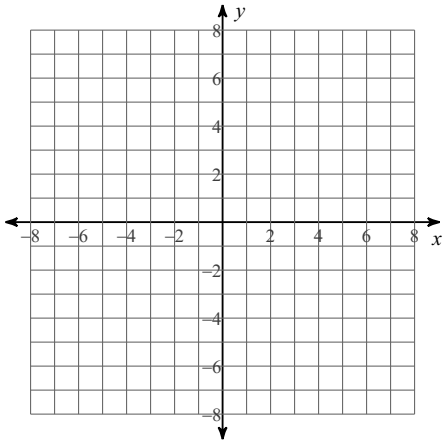
Precalculus Name_____

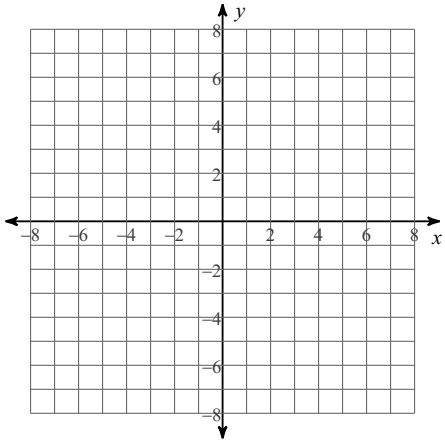
Extra Practice of Rational Functions

For each function, identify the holes, intercepts, horizontal and vertical asymptote, and domain. Then sketch the graph.

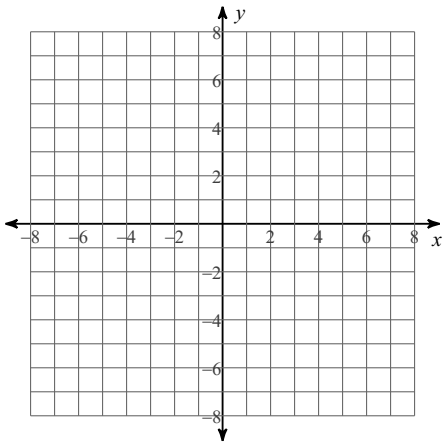
1) $f(x) = \dfrac{3x^2 + 3x - 18}{x^2 + 3x}$



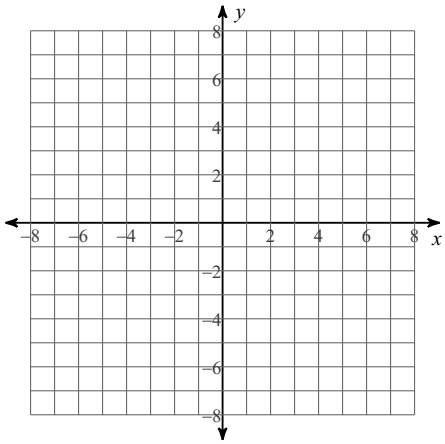
2) $f(x) = \dfrac{x^2 - x - 12}{-4x + 4}$



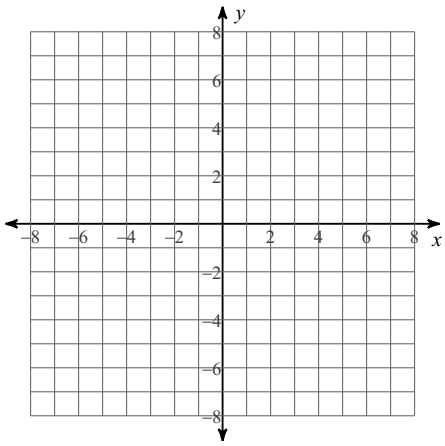
3) $f(x) = \dfrac{x^3 + 6x^2 + 8x}{4x^2 + 12x}$



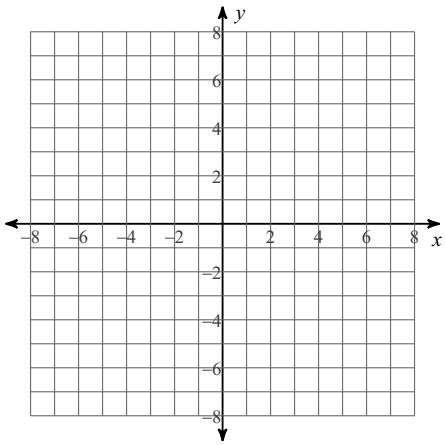
4) $f(x) = \dfrac{x + 4}{-2x + 8}$



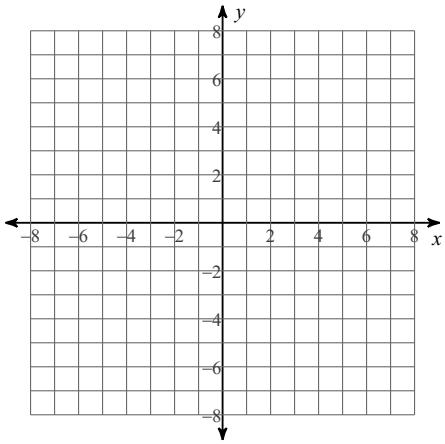
5) $f(x) = \dfrac{x^2 - 3x - 4}{-4x - 8}$



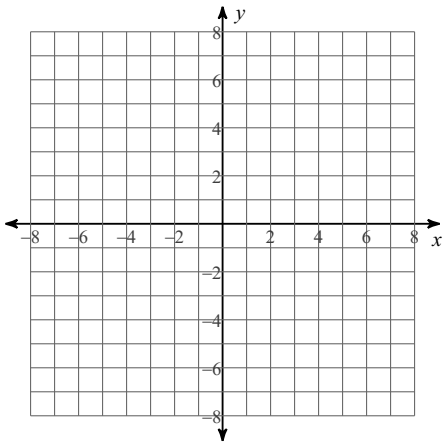
6) $f(x) = \dfrac{x^2 - 16}{3x^2 - 12}$



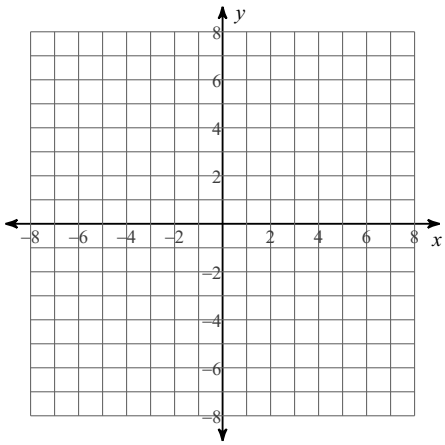
7) $f(x) = \dfrac{x^2 - 3x - 4}{-4x^2 + 4x + 24}$



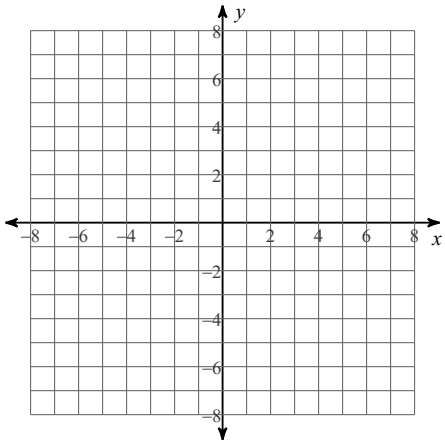
8) $f(x) = \dfrac{2x - 2}{x^3 - 4x^2 + 3x}$



9) $f(x) = \dfrac{-2x^2 - 12x - 16}{x^2 + 3x + 2}$



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



Precalculus Name_____

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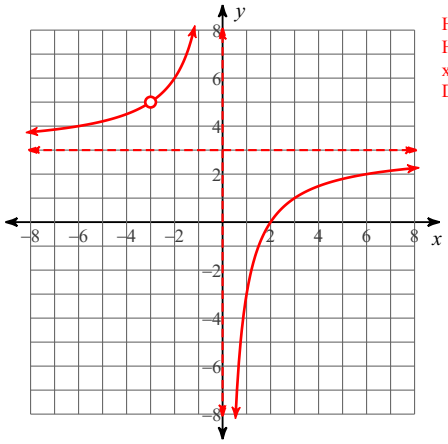
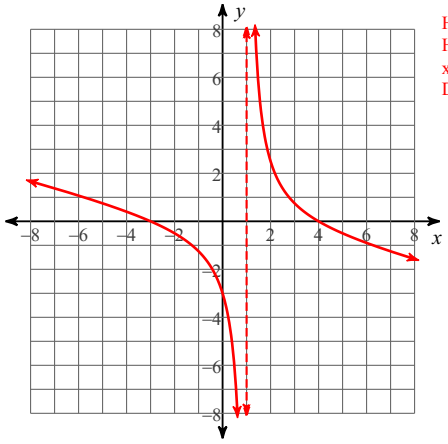


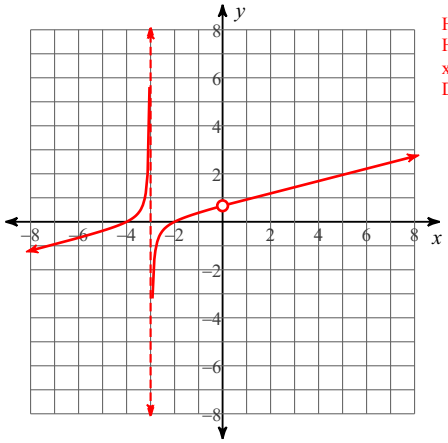
Holes: $x = -3$
Horz. Asym.: $y = 3$
x-intercepts: 2, y-intercept: None
Domain:
All reals except 0, −3

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



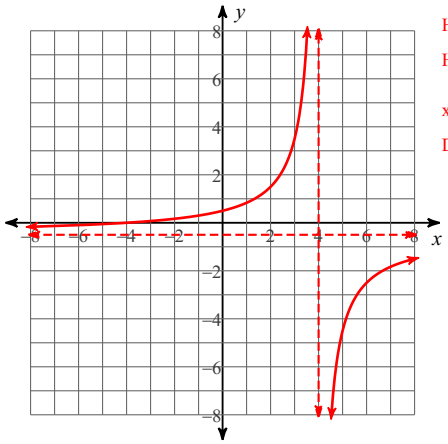
Holes: None
Horz. Asym.: None
x-intercepts: 4, −3, y-intercept: −3
Domain:
All reals except 1

3) $f(x) = \dfrac{x^3 + 6x^2 + 8x}{4x^2 + 12x}$



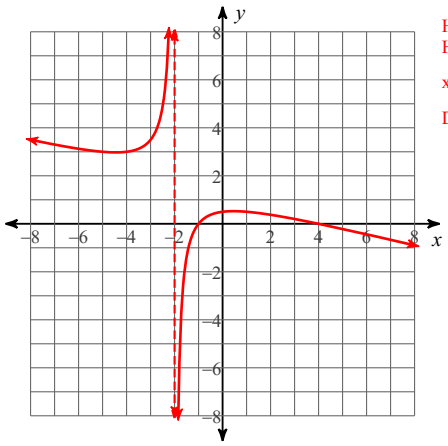
Holes: $x = 0$
Horz. Asym.: None
x-intercepts: −4, −2, y-intercept: None
Domain:
All reals except −3, 0

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



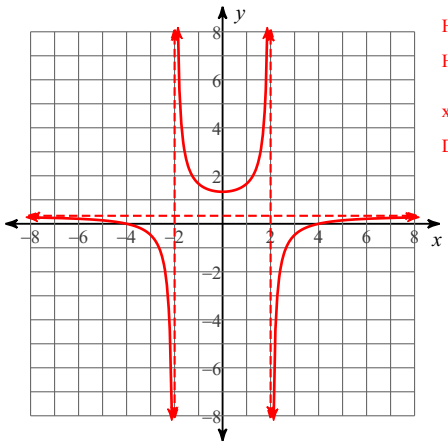
Holes: None
Horz. Asym.: $y = -\frac{1}{2}$
x-intercepts: −4, y-intercept: $\frac{1}{2}$
Domain:
All reals except 4

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



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

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



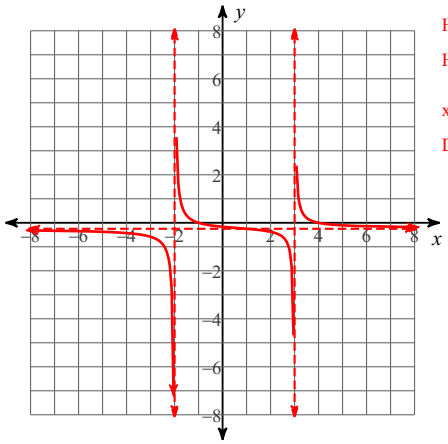
Holes: None

Horz. Asym.: $y = \frac{1}{3}$

x-intercepts: 4, −4, y-intercept: $\frac{4}{3}$

Domain:
All reals except −2, 2

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



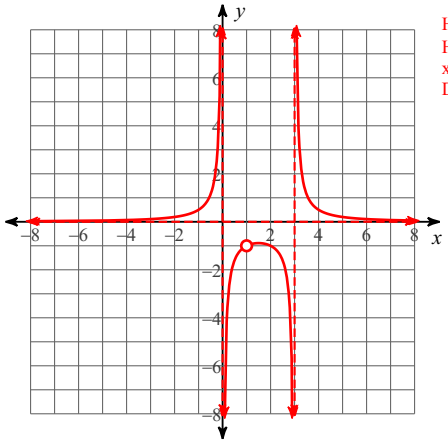
Holes: None

Horz. Asym.: $y = -\frac{1}{4}$

x-intercepts: 4, −1, y-intercept: $-\frac{1}{6}$

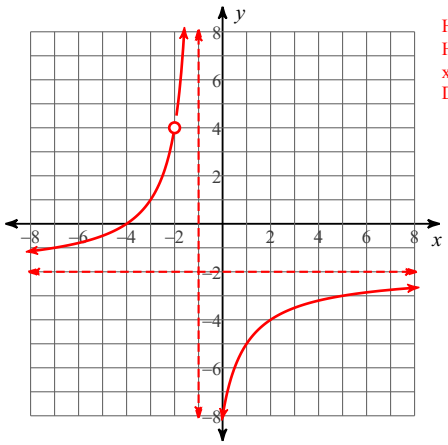
Domain:
All reals except −2, 3

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



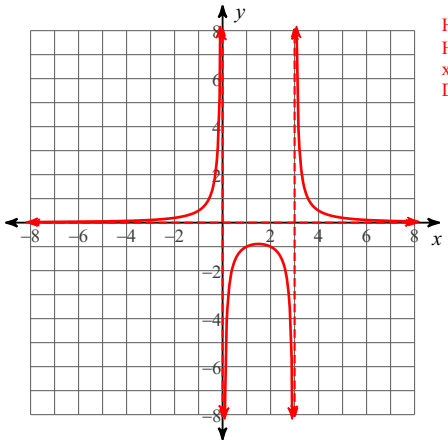
Holes: $x = 1$
Horz. Asym.: $y = 0$
x-intercepts: None, y-intercept: None
Domain:
All reals except 0, 3, 1

9) $f(x) = \dfrac{-2x^2 - 12x - 16}{x^2 + 3x + 2}$



Holes: $x = -2$
Horz. Asym.: $y = -2$
x-intercepts: −4, y-intercept: −8
Domain:
All reals except −1, −2

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



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