

## Key Features of Rational Functions

4. Sketch the graph of each of the functions in the grids provided. Determine the key properties of each function. Clearly label all asymptotes.

a)  $f(x) = \frac{1}{x^2 - 2x - 3}$

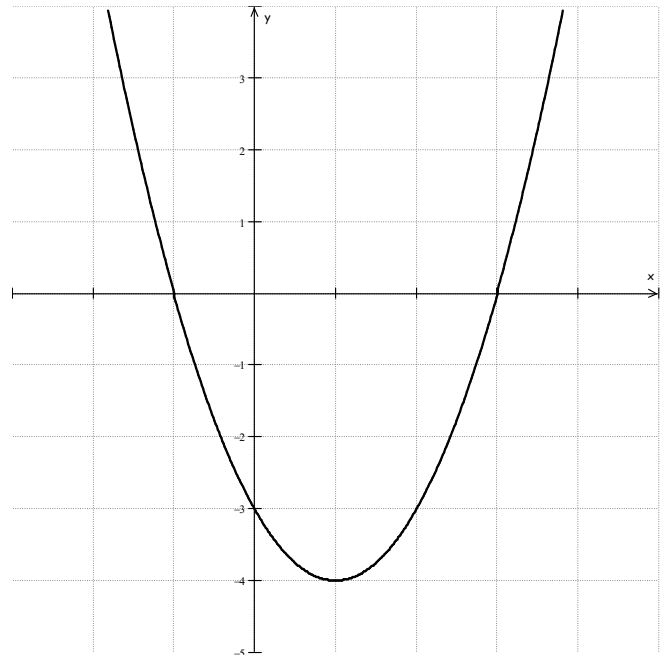
Sketch  $f(x) = \frac{1}{x^2 - 2x - 3}$   
using BIG/LITTLE CONCEPT

The sketch of  $y = x^2 - 2x - 3$  is given on the grid at the right.

With  $f(x) = \frac{1}{x^2 - 2x - 3}$ :

For  $x$ -int, \_\_\_\_\_

For  $y$ -int, \_\_\_\_\_



Vertical asymptote(s) \_\_\_\_\_

Horizontal asymptote \_\_\_\_\_

Linear oblique asymptote \_\_\_\_\_

Domain \_\_\_\_\_

Pos. Intervals \_\_\_\_\_

Neg. Intervals \_\_\_\_\_

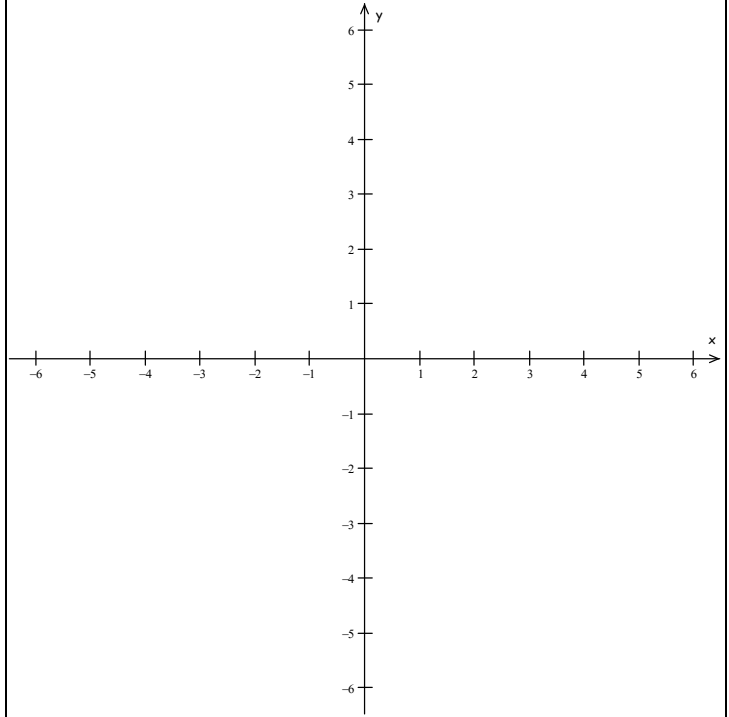
Incr. Intervals \_\_\_\_\_

Decr. Intervals \_\_\_\_\_

4. b)  $f(x) = \frac{-2x^2 - 2x + 12}{x^2 + 6x + 9}$

For y-int, \_\_\_\_\_

For x-int, \_\_\_\_\_



Vertical asymptote(s) \_\_\_\_\_

Horizontal asymptote \_\_\_\_\_

Linear oblique asymptote \_\_\_\_\_

Domain \_\_\_\_\_

Range \_\_\_\_\_

Pos. Intervals \_\_\_\_\_

Neg. Intervals \_\_\_\_\_

Incr. Intervals \_\_\_\_\_

Decr. Intervals \_\_\_\_\_

4. c)  $f(x) = \frac{x^3 + 3x^2 - 6x - 8}{x^2 + x - 12}$

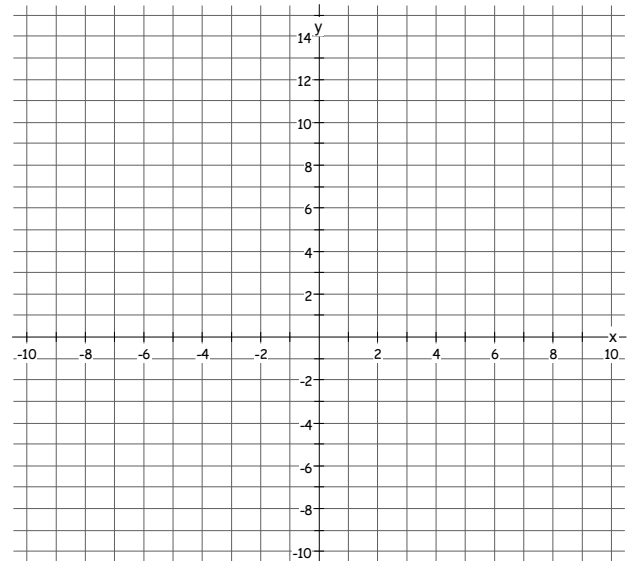
For y-int, \_\_\_\_\_

For x-int, \_\_\_\_\_

Vertical asymptote(s) \_\_\_\_\_

Horizontal asymptote \_\_\_\_\_

Linear oblique asymptote  
\_\_\_\_\_



Domain \_\_\_\_\_