

Math 173 – Section 4.5: Sketching Rational Functions

1. Consider the following rational function: $f(x) = \frac{4}{x-2}$.

What is the y-intercept?

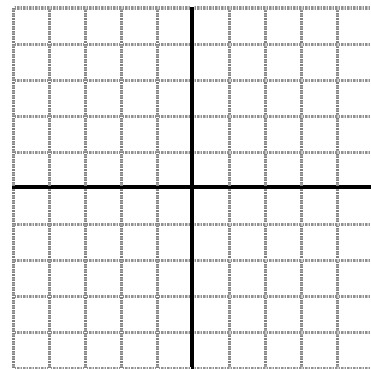
What are the x-intercepts?

Are there any vertical asymptotes? If so, where?

Are there any horizontal asymptotes? If so, where?

Are there any oblique asymptotes? If so, where?

Sketch the graph as accurately as possible.



2. Consider the following rational function: $f(x) = \frac{3x-1}{x}$.

What is the y-intercept?

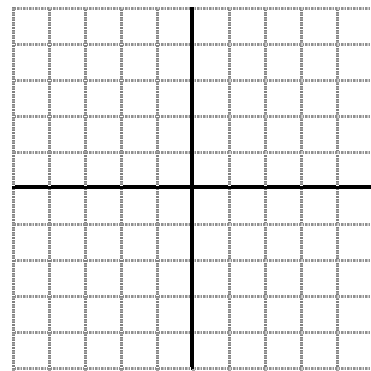
What are the x-intercepts?

Are there any vertical asymptotes? If so, where?

Are there any horizontal asymptotes? If so, where?

Are there any oblique asymptotes? If so, where?

Sketch the graph as accurately as possible.



3. Consider the following rational function: $f(x) = \frac{x}{x^2 - x - 2}$.

What is the y-intercept? _____

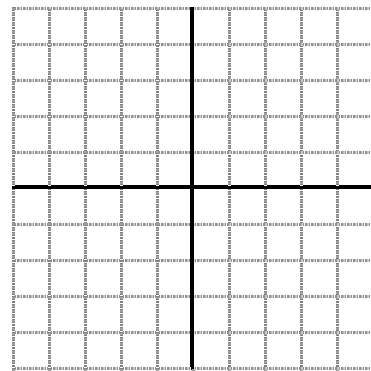
What are the x-intercepts? _____

Are there any vertical asymptotes? If so, where?

Are there any horizontal asymptotes? If so, where?

Are there any oblique asymptotes? If so, where?

Sketch the graph as accurately as possible.



4. Consider the following rational function: $f(x) = \frac{2(x^2 - 9)}{x^2 - 4}$.

What is the y-intercept?

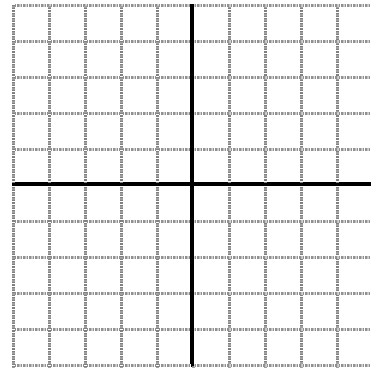
What are the x-intercepts?

Are there any vertical asymptotes? If so, where?

Are there any horizontal asymptotes? If so, where?

Are there any oblique asymptotes? If so, where?

Sketch the graph as accurately as possible.



5. Consider the following rational function: $f(x) = \frac{x^2 - x}{x + 1}$.

What is the y-intercept?

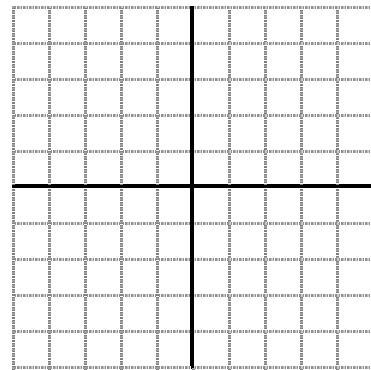
What are the x-intercepts?

Are there any vertical asymptotes? If so, where?

Are there any horizontal asymptotes? If so, where?

Are there any oblique asymptotes? If so, where?

Sketch the graph as accurately as possible.



6. Consider the following rational function: $f(x) = \frac{x^2 - x - 2}{x - 1}$.

What is the y-intercept?

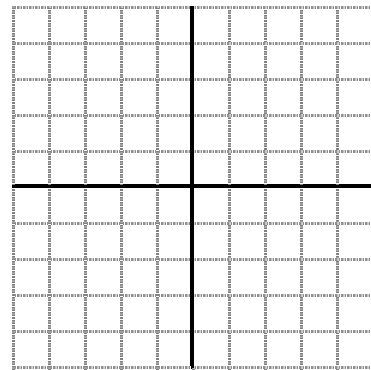
What are the x-intercepts?

Are there any vertical asymptotes? If so, where?

Are there any horizontal asymptotes? If so, where?

Are there any oblique asymptotes? If so, where?

Sketch the graph as accurately as possible.



7. Consider the following rational function: $f(x) = \frac{x}{x^2 + 1}$.

What is the y-intercept? _____

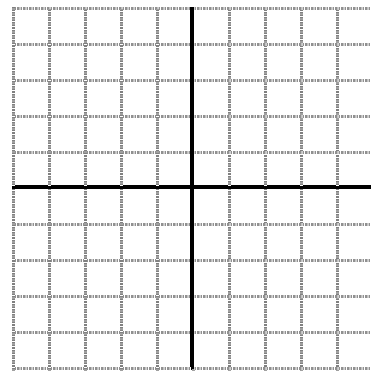
What are the x-intercepts? _____

Are there any vertical asymptotes? If so, where?

Are there any horizontal asymptotes? If so, where?

Are there any oblique asymptotes? If so, where?

Sketch the graph as accurately as possible.



8. Consider the following rational function: $f(x) = \frac{x^2 - 9}{x + 3}$.

What is the y-intercept?

What are the x-intercepts?

Are there any vertical asymptotes? If so, where?

Are there any horizontal asymptotes? If so, where?

Are there any oblique asymptotes? If so, where?

Sketch the graph as accurately as possible.

