Math 1050 ~ College Algebra
14 Graphs with Holes and Variations on Asymptotes

Learning Objectives

- Identify holes in the graph of a rational function.
- Graph rational functions without vertical asymptotes.
- Find slant (oblique) asymptotes.
- Graph rational functions having slant asymptotes.

Since there can be no points on the vertical asymptotes, what happens in an example like this?

Ex 1: Analyze and graph.

\[ H(x) = \frac{x - 2}{x^2 - 4} \]
Graphing Rational Functions with No Vertical Asymptotes

Ex 2: Analyze and graph. \( H(x) = \frac{2x + 3}{x^2 + 2} \)

Identifying Slant (Oblique) Asymptotes

Ex 3: Analyze and graph. 
\[ H(x) = \frac{x^2 - x + 6}{x^3 + 3} \]
Ex 4: Analyze and graph.

\[ f(x) = \frac{x^3 - 1}{x - 1} \]