

## 2.6 Graphing Rational Functions

For each function:

- A. Identify the domain using interval notation.
- B. Find the x and y-intercepts.
- C. Examine the end behavior and identify any horizontal asymptotes.
- D. Determine and prove any vertical asymptotes (demonstrate the asymptotic behavior).
- E. Identify and name all points of discontinuity.
- F. Sketch a graph of the function.
- G. Identify the range using interval notation.

$$1) f(x) = \frac{x}{x^2 - 9}$$

$$2) g(x) = \frac{x^2 - 5x - 6}{x^2 - x - 12}$$

$$3) h(x) = \frac{3x^2}{9 - x^2}$$

$$4) f(x) = \frac{2x - 4}{x^2 - 4}$$

$$5) g(x) = \frac{3x^2 + 5x - 2}{x^2 - 6x}$$

$$6) h(x) = \frac{x^2 - 5x - 14}{x - 7}$$

$$7) f(x) = \frac{x + 3}{x^2 + 2x - 8}$$

$$8) g(x) = \frac{5x^2 - 3x - 2}{x^2 - 1}$$

$$9) h(x) = \frac{2x}{x + 3}$$

$$10) f(x) = \frac{16 - x^2}{x^2 - x - 20}$$