

4-6 Finding Domain, Holes and Vertical Asymptotes

Identify the domain of each.

$$1) f(x) = \frac{x^2 + 2x - 8}{-4x^2 - 8x + 12}$$

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

Identify the holes and domain of each.

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

$$4) f(x) = \frac{x^3 - 5x^2 + 6x}{3x^2 - 21x + 36}$$

$$5) f(x) = \frac{x^3 + 2x^2 - 8x}{4x^2 - 4x - 24}$$

$$6) f(x) = \frac{-x - 2}{x^3 - x^2 - 6x}$$

$$7) f(x) = \frac{3x^2 + 21x + 36}{x^3 + 7x^2 + 12x}$$

$$8) f(x) = \frac{-2x^2 - 6x}{x^2 + x - 6}$$

Identify the vertical asymptotes and domain of each.

$$9) f(x) = \frac{x^2 - 9}{-3x^2 + 21x - 36}$$

$$10) f(x) = \frac{x^3 + x^2 - 2x}{x^3 - 4x}$$

$$11) f(x) = \frac{x^3 - 3x^2 - 4x}{3x^2 - 3x - 18}$$

$$12) f(x) = \frac{-2x - 4}{x + 1}$$

$$13) f(x) = \frac{x^3 + x^2 - 12x}{-4x^2 + 4x}$$

$$14) f(x) = \frac{x^3 + x^2 - 2x}{-3x^2 - 6x}$$

Identify the holes, vertical asymptotes, and domain of each.

$$15) f(x) = \frac{-3x^2 + 9x}{x^2 - 4x}$$

$$16) f(x) = \frac{-x^2 + 16}{x^2 + 2x - 8}$$

$$17) f(x) = \frac{x^3 - 3x^2 - 4x}{4x^2 - 36}$$

$$18) f(x) = \frac{2}{x + 2}$$

$$19) f(x) = \frac{2x}{x^3 - 2x^2 - 3x}$$

$$20) f(x) = \frac{x^2 + x - 12}{-4x^2 - 12x}$$