

Graph. Identify all the important information

$$1.) f(x) = \frac{x^2 - 6x - 16}{x^2 - x - 6} = \frac{(x-8)(x+2)}{(x-3)(x+2)} = \frac{(x-8)}{(x-3)}$$

y-intercept: (0, 8/3)

Hole(s): (-2, 2)

Zero(s): \_\_\_\_\_

Vertical Asymptote(s): x = 3

Horizontal Asymptote(s): y = 1

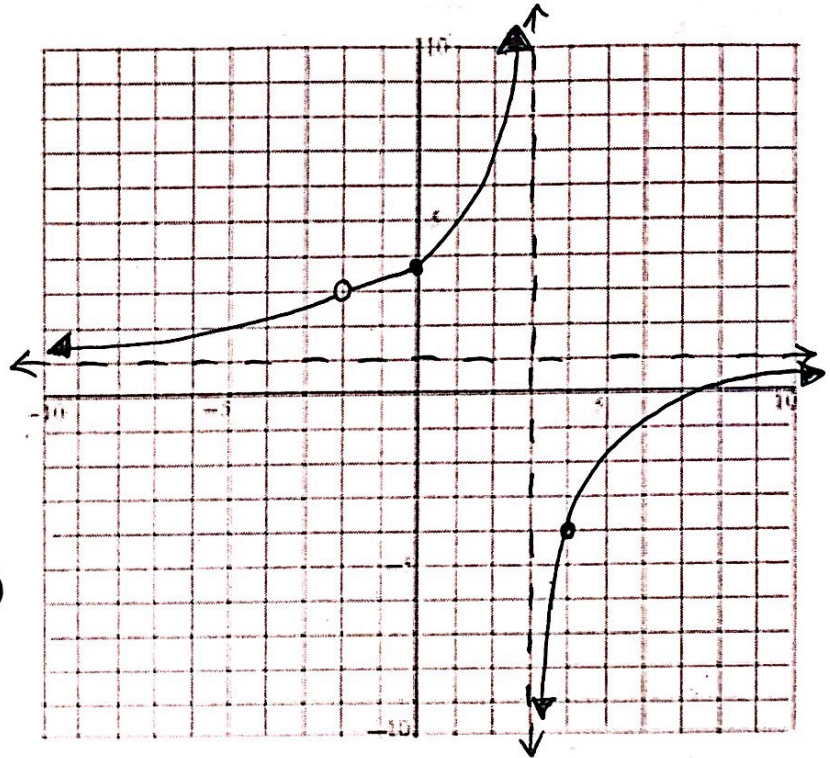
Domain:  $(-\infty, -2) \cup (-2, 3) \cup (3, \infty)$

Range:  $(-\infty, 1) \cup (1, 2) \cup (2, \infty)$

End Behavior:

as  $x \rightarrow \infty, f(x) \rightarrow$  1

as  $x \rightarrow -\infty, f(x) \rightarrow$  1



Perform Indicated Operation

$$2.) \frac{x+7}{x^2-9} \div \frac{x^2+9x+14}{3x^2-9x}$$

$$= \frac{\cancel{(x+7)}}{(x-3)(x+3)} \cdot \frac{3x \cancel{(x-3)}}{\cancel{(x+7)}(x+2)}$$

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

$$3.) \frac{\cancel{(x-1)} 3x}{\cancel{(x-1)} x-5} - \frac{2x+3}{x^2-6x+5}$$

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

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

Perform Indicated Operation.

$$4.) \frac{\frac{x^2-5x+6}{4x^2-16}}{\frac{2x+4}{4x^2+16x+16}}$$

$$\frac{x^2-5x+6}{4x^2-16} \div \frac{2x+4}{4x^2+16x+16}$$

$$\frac{(x-5)(x-1)}{\cancel{4}(x+2)(x-2)} \cdot \frac{\cancel{4}(x+2)(x+2)}{2(x+2)}$$

$$\frac{(x-5)(x-1)}{2(x-2)}$$

Solve. Remember to check for extraneous solutions.

$$5.) \left[ \frac{4}{x^2-8x+12} = \frac{x}{x-2} + \frac{1}{x-6} \right] \cdot (x-6)(x-2)$$

$$4 = x(x-6) + x-2$$

$$4 = x^2 - 6x + x - 2$$

$$0 = x^2 - 5x - 6$$

$$0 = (x-6)(x+1)$$

$$x = 6 \quad \boxed{x = -1}$$

EXTRANECHUS

$$6.) \left[ \frac{5}{n} - \frac{6}{n^2-2n^2} = \frac{n^2+5n-6}{n^3-2n^2} \right] n^2(n-2)$$

$$5n(n-2) - 6 = n^2 + 5n - 6$$

$$5n^2 - 10n - 6 = n^2 + 5n - 6$$

$$4n^2 - 15n = 0$$

$$n(4n-15) = 0$$

$$n = 0 \quad 4n - 15 = 0$$

EXTRANECHUS

$$\boxed{n = 15/4}$$