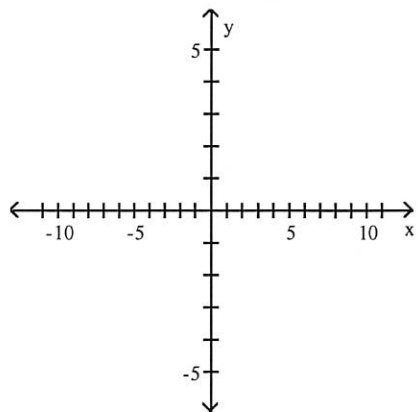


Graph the rational function and analyze it in the following way: find the intercepts, asymptotes, use limits to describe the behavior at the vertical asymptotes and the end behavior. Find the domain and range. Determine where the function is continuous and where it is increasing and decreasing. Find any local extrema.

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



Solve the equation.

$$2) \frac{6x}{x-6} - \frac{4}{x} = \frac{24}{x^2 - 6x}$$

$$3) \frac{2x}{x+2} + \frac{5}{x-5} = \frac{8}{x^2 - 3x - 10}$$

Solve the polynomial inequality.

$$4) (x - 3)(x^2 - 3x - 10) < 0$$

Solve the inequality.

$$5) \frac{x^2(x-2)^3}{\sqrt{x+4}} < 0$$

$$6) \frac{x^2 - 4x - 5}{x^2 + 11x + 30} < 0$$