

2.

$$f(x) = \frac{5-x}{2x^2+x-1} = \frac{A}{2x-1} + \frac{B}{x+1}$$

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

$$5-x = a(x+1) + b(2x-1)$$

$$5-x = ax+a+2bx-b$$

$$5-x = (a+2b)x + a-b$$

$$a+2b = -1$$

$$2a-2b = 5/10$$

$$3a = 9$$

$$a = 3$$

$$b = -2$$

$$a+2b = -1$$

$$3+2(b) = -1$$

$$2b = -4$$

$$b = -2$$

5.

$$f(x) = \frac{x-2}{x^2+4x+3} = \frac{\overset{5/2}{\cancel{5/3}}}{x+3} - \frac{3/2}{x+1}$$

$$\frac{6x-3}{x^2+3x-4} = \frac{a}{(x+4)} + \frac{b}{(x-1)}$$

$$6x-3 = \frac{27}{5(x+4)} + \frac{3/5}{x-1}$$

$$6x-3 = a(x-1) + b(x+4)$$

$$6x-3 = ax - a + bx + 4b$$

$$6x-3 = (a+b)x + -a+4b$$

$$a+b = 6$$

$$-a+4b = -3$$

$$5b = 3$$

$$b = \frac{3}{5}$$

$$a + \frac{3}{5} = \frac{30}{5}$$

$$a = \frac{27}{5}$$

Solve rational equations :

$$\frac{x(x+3)}{x-3(x+3)} + \frac{2x(x-3)}{x+3(x-3)} = \frac{18}{x^2-9}$$

$$x(x+3) + 2x(x-3) = 18$$

$$x^2 + 3x + 2x^2 - 6x - 18 = 0$$

$$3x^2 - 3x - 18 = 0$$

$$3(x^2 - x - 6) = 0$$

$$3(x-3)(x+2) = 0$$

$$x-3=0$$

$$~~x=3~~$$

$$x+2=0$$

$$x=-2$$

check

$$\frac{x}{x-3} + \frac{2x}{x+3} = \frac{18}{x^2-9}$$

$$~~x \neq 3~~$$

$$x = -2$$

Solve

$$\frac{x}{x-6} \rightarrow \frac{1}{x-4}$$

$$x \neq 6, 4$$

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

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

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

$$(x-2)(x-3) = 0$$

$$x=2, \quad x=3$$

$$\frac{x}{x-6} > \frac{1}{x-4}$$