

# 분수방정식의 결합형 예제

(Combined Example of Fractional Equations)

# Combined Example of Fractional Equations

▶ Start

▶ End

## Combined Example of Fractional Equations

▶ Start

▶ End

$$\frac{1}{x-1} + \frac{1}{x-3} + \frac{1}{x-7} + \frac{1}{x-9} = 0 \cdots (1)$$

## Combined Example of Fractional Equations

▶ Start

▶ End

$$\frac{1}{x-1} + \frac{1}{x-3} + \frac{1}{x-7} + \frac{1}{x-9} = 0 \dots (1)$$
$$\frac{1}{x-1} + \frac{1}{x-9} + \frac{1}{x-3} + \frac{1}{x-7} = 0$$

## Combined Example of Fractional Equations

▶ Start

▶ End

$$\frac{1}{x-1} + \frac{1}{x-3} + \frac{1}{x-7} + \frac{1}{x-9} = 0 \quad \dots (1)$$

$$\frac{1}{x-1} + \frac{1}{x-9} + \frac{1}{x-3} + \frac{1}{x-7} = 0$$

$$\frac{2x-10}{(x-1)(x-9)} + \frac{2x-10}{(x-3)(x-7)} = 0$$

## Combined Example of Fractional Equations

▶ Start

▶ End

$$\frac{1}{x-1} + \frac{1}{x-3} + \frac{1}{x-7} + \frac{1}{x-9} = 0 \dots (1)$$

$$\frac{1}{x-1} + \frac{1}{x-9} + \frac{1}{x-3} + \frac{1}{x-7} = 0$$

$$\frac{2x-10}{(x-1)(x-9)} + \frac{2x-10}{(x-3)(x-7)} = 0$$

$$(x-5) \left\{ \frac{1}{(x-1)(x-9)} + \frac{1}{(x-3)(x-7)} \right\} = 0$$

## Combined Example of Fractional Equations

▶ Start

▶ End

$$\frac{1}{x-1} + \frac{1}{x-3} + \frac{1}{x-7} + \frac{1}{x-9} = 0 \quad \dots (1)$$

$$\frac{1}{x-1} + \frac{1}{x-9} + \frac{1}{x-3} + \frac{1}{x-7} = 0$$

$$\frac{2x-10}{(x-1)(x-9)} + \frac{2x-10}{(x-3)(x-7)} = 0$$

$$(x-5) \left\{ \frac{1}{(x-1)(x-9)} + \frac{1}{(x-3)(x-7)} \right\} = 0$$

$$(x-5) \{ (x-3)(x-7) + (x-1)(x-9) \} = 0$$

## Combined Example of Fractional Equations

▶ Start

▶ End

$$\frac{1}{x-1} + \frac{1}{x-3} + \frac{1}{x-7} + \frac{1}{x-9} = 0 \quad \dots (1)$$

$$\frac{1}{x-1} + \frac{1}{x-9} + \frac{1}{x-3} + \frac{1}{x-7} = 0$$

$$\frac{2x-10}{(x-1)(x-9)} + \frac{2x-10}{(x-3)(x-7)} = 0$$

$$(x-5) \left\{ \frac{1}{(x-1)(x-9)} + \frac{1}{(x-3)(x-7)} \right\} = 0$$

$$(x-5) \{ (x-3)(x-7) + (x-1)(x-9) \} = 0$$

$$(x-5)(2x^2 - 20x + 30) = 0$$



## Combined Example of Fractional Equations

▶ Start

▶ End

$$\frac{1}{x-1} + \frac{1}{x-3} + \frac{1}{x-7} + \frac{1}{x-9} = 0 \quad \dots (1)$$

$$\frac{1}{x-1} + \frac{1}{x-9} + \frac{1}{x-3} + \frac{1}{x-7} = 0$$

$$\frac{2x-10}{(x-1)(x-9)} + \frac{2x-10}{(x-3)(x-7)} = 0$$

$$(x-5) \left\{ \frac{1}{(x-1)(x-9)} + \frac{1}{(x-3)(x-7)} \right\} = 0$$

$$(x-5) \{ (x-3)(x-7) + (x-1)(x-9) \} = 0$$

$$(x-5)(2x^2 - 20x + 30) = 0$$

$$(x-5)(x^2 - 10x + 15) = 0$$

## Combined Example of Fractional Equations

▶ Start

▶ End

$$\frac{1}{x-1} + \frac{1}{x-3} + \frac{1}{x-7} + \frac{1}{x-9} = 0 \quad \dots (1)$$

$$\frac{1}{x-1} + \frac{1}{x-9} + \frac{1}{x-3} + \frac{1}{x-7} = 0$$

$$\frac{2x-10}{(x-1)(x-9)} + \frac{2x-10}{(x-3)(x-7)} = 0$$

$$(x-5) \left\{ \frac{1}{(x-1)(x-9)} + \frac{1}{(x-3)(x-7)} \right\} = 0$$

$$(x-5) \{ (x-3)(x-7) + (x-1)(x-9) \} = 0$$

$$(x-5)(2x^2 - 20x + 30) = 0$$

$$(x-5)(x^2 - 10x + 15) = 0 \quad x = 5, 5 \pm \sqrt{10}$$

▶ Start

▶ End

$$\frac{1}{\frac{x-1}{1}} + \frac{1}{\frac{x-1}{3}} + \frac{1}{\frac{x-1}{7}} + \frac{1}{\frac{x-1}{9}} = 0 \quad \dots (1)$$

$$\frac{1}{x-1} + \frac{1}{x-9} + \frac{1}{x-3} + \frac{1}{x-7} = 0$$

$$\frac{2x-10}{(x-1)(x-9)} + \frac{2x-10}{(x-3)(x-7)} = 0$$

$$(x-5) \left\{ \frac{1}{(x-1)(x-9)} + \frac{1}{(x-3)(x-7)} \right\} = 0$$

$$(x-5) \{ (x-3)(x-7) + (x-1)(x-9) \} = 0$$

$$(x-5)(2x^2 - 20x + 30) = 0$$

$$(x-5)(x^2 - 10x + 15) = 0 \quad x = 5, 5 \pm \sqrt{10}$$

(1)식의 분모를 0으로 만들지 않으므로

▶ Start

▶ End

$$\frac{1}{\frac{x-1}{1}} + \frac{1}{\frac{x-3}{1}} + \frac{1}{\frac{x-7}{1}} + \frac{1}{\frac{x-9}{1}} = 0 \quad \dots (1)$$

$$\frac{1}{x-1} + \frac{1}{x-9} + \frac{1}{x-3} + \frac{1}{x-7} = 0$$

$$\frac{2x-10}{(x-1)(x-9)} + \frac{2x-10}{(x-3)(x-7)} = 0$$

$$(x-5) \left\{ \frac{1}{(x-1)(x-9)} + \frac{1}{(x-3)(x-7)} \right\} = 0$$

$$(x-5) \{ (x-3)(x-7) + (x-1)(x-9) \} = 0$$

$$(x-5)(2x^2 - 20x + 30) = 0$$

$$(x-5)(x^2 - 10x + 15) = 0 \quad x = 5, 5 \pm \sqrt{10}$$

(1)식의 분모를 0으로 만들지 않으므로

$$\therefore x = 5, 5 \pm \sqrt{10}$$

Github:

<https://min7014.github.io/math20210211001.html>

Click or paste URL into the URL search bar,  
and you can see a picture moving.