



# Equations with Fractions SOLUTIONS

1.  $x = 3$   $x = -6$
2.  $x = 8$   $x = -4$
3.  $x = 3$   $x = 2$
4.  $x = 4$   $x = \frac{10}{3}$
5.  $x = 2$   $x = -7$  (S\*)
6.  $x = 2$   $x = -10$
7.  $x = 5$   $x = \frac{10}{3}$
8.  $x = -1$   $x = -\frac{19}{5}$  (S\*)
9.  $x = 8$   $x = -3$
10.  $x = 7$   $x = -6$
11.  $x = 5$   $x = \frac{5}{3}$  (S\*)
12.  $x = 2$   $x = \frac{13}{4}$

## Question 5

$$\frac{1}{x+1} - \frac{1}{6} = \frac{1}{x+4}$$

$$\text{L.C.D.} = (x+1)(6)(x+4)$$

$$(x+1)(6)(x+4)\frac{1}{x+1} - (x+1)(6)(x+4)\frac{1}{6} = (x+1)(6)(x+4)\frac{1}{x+4}$$

$$(6)(x+4)(1) - (x+1)(x+4)(1) = (x+1)(6)(1)$$

$$(6x+24)(1) - [x(x+4) + 1(x+4)](1) = (6x+6)(1)$$

$$6x+24 - [x^2 + 4x + 1x + 4](1) = 6x+6$$

$$6x+24 - [x^2 + 5x + 4] = 6x+6$$

$$6x+24 - x^2 - 5x - 4 - 6x - 6 = 0$$

$$-x^2 - 5x + 14 = 0 \quad \times (-1)$$

$$x^2 + 5x - 14 = 0$$

$$(x+7)(x-2) = 0$$

$$x = -7 \quad x = 2$$





### Question 8

$$\frac{1}{x+3} + \frac{3}{x+5} = \frac{5}{4}$$

$$\text{L.C.D.} = (x+3)(x+5)(4)$$

$$\begin{aligned} (x+3)(x+5)(4)\frac{1}{x+3} + (x+3)(x+5)(4)\frac{3}{x+5} &= (x+3)(x+5)(4)\frac{5}{4} \\ (x+5)(4)(1) + (x+3)(4)(3) &= (x+3)(x+5)(5) \\ (4x+20)(1) + (4x+12)(3) &= [x(x+5) + 3(x+5)](5) \\ 4x+20 + 12x+36 &= [x^2 + 5x + 3x + 15](5) \\ 16x+56 &= [x^2 + 8x + 15](5) \\ 16x+56 &= 5x^2 + 40x + 75 \\ 16x+56 - 5x^2 - 40x - 75 &= 0 \\ -5x^2 - 24x - 19 &= 0 \quad \times (-1) \\ 5x^2 + 24x + 19 &= 0 \\ (5x+19)(x+1) &= 0 \\ x = -\frac{19}{5} \quad x = -1 \end{aligned}$$

### Question 11

$$\frac{3}{x-2} + \frac{8}{x-1} = 3$$

$$\text{L.C.D.} = (x-2)(x-1)$$

$$\begin{aligned} (x-2)(x-1)\frac{3}{x-2} + (x-2)(x-1)\frac{8}{x-1} &= (x-2)(x-1)3 \\ (x-1)(3) + (x-2)8 &= (x-2)(x-1)(3) \\ 3x-3 + 8x-16 &= [x(x-1) - 2(x-1)](3) \\ 11x-19 &= [x^2 - 1x - 2x + 2](3) \\ 11x-19 &= [x^2 - 3x + 2](3) \\ 11x-19 &= 3x^2 - 9x + 6 \\ 11x-19 - 3x^2 + 9x - 6 &= 0 \\ -3x^2 + 20x - 25 &= 0 \quad \times (-1) \\ 3x^2 - 20x + 25 &= 0 \\ (3x-5)(x-5) &= 0 \\ x = \frac{5}{3} \quad x = 5 \end{aligned}$$

