The method: Adding with unlike denominators

Rewrite each fraction over the LCD, add the numerators, and combine like terms. Leave the denominator factored.

$$\frac{5}{x+4}+\frac{5}{x-6}=\frac{5(x-6)}{(x+4)(x-6)}+\frac{5(x+4)}{(x+4)(x-6)}$$ rewrite each over the LCD, $(x+4)(x-6)$

$$\frac{5(x-6)+5(x+4)}{(x+4)(x-6)}=\frac{10x-10}{(x+4)(x-6)}$$ add the numerators, then combine like terms

$$\frac{7}{4x}+\frac{5}{8x^2}=\frac{14x}{8x^2}+\frac{5}{8x^2}=\frac{14x+5}{8x^2}$$ rewrite each over the LCD, $8x^2$, then add the numerators

$$\frac{x}{x+6}+\frac{8}{x-2}=\frac{x(x-2)}{(x+6)(x-2)}+\frac{8(x+6)}{(x+6)(x-2)}$$ rewrite each over the LCD, $(x+6)(x-2)$

$$\frac{x(x-2)+8(x+6)}{(x+6)(x-2)}=\frac{x^2+6x+48}{(x+6)(x-2)}$$ add the numerators, then combine like terms

Problems 1 and 2 worked out · Version 0A

$$\frac{2}{x+6}+\frac{8}{x+2}=\frac{2(x+2)}{(x+6)(x+2)}+\frac{8(x+6)}{(x+6)(x+2)}$$ rewrite each over the LCD, $(x+6)(x+2)$

$$\frac{2(x+2)+8(x+6)}{(x+6)(x+2)}=\frac{10x+52}{(x+6)(x+2)}$$ add the numerators, then combine like terms

$$\frac{7}{x-3}+\frac{3}{x-1}=\frac{7(x-1)}{(x-3)(x-1)}+\frac{3(x-3)}{(x-3)(x-1)}$$ rewrite each over the LCD, $(x-3)(x-1)$

$$\frac{7(x-1)+3(x-3)}{(x-3)(x-1)}=\frac{10x-16}{(x-3)(x-1)}$$ add the numerators, then combine like terms

Adding with unlike denominators · Version 0A

1) $\frac{10x+52}{(x+6)(x+2)}$ 2) $\frac{10x-16}{(x-3)(x-1)}$ 3) $\frac{x^2+2x+6}{(x+1)(x-4)}$

4) $\frac{x^2+11x+24}{(x+4)(x+5)}$ 5) $\frac{5x+11}{(x-2)(x+5)}$ 6) $\frac{x^2+3x+35}{(x+7)(x-2)}$

7) $\frac{81x+4}{18x^2}$ 8) $\frac{32x+21}{24x^2}$ 9) $\frac{12x+36}{(x-1)(x+7)}$

10) $\frac{x^2+9x+10}{(x+2)(x+4)}$ 11) $\frac{4x-8}{(x+2)(x-6)}$ 12) $\frac{x^2-3x-2}{(x-1)(x-5)}$

13) $\frac{15x-69}{(x-1)(x-7)}$ 14) $\frac{7x+21}{6x^2}$ 15) $\frac{x^2+7x+21}{(x+7)(x+4)}$

16) $\frac{8x-30}{(x-6)(x+3)}$ 17) $\frac{14x-14}{(x+5)(x-7)}$ 18) $\frac{12x+15}{(x-4)(x+5)}$

19) $\frac{20x+3}{24x^2}$ 20) $\frac{4x+21}{6x^2}$ 21) $\frac{5x-16}{(x-4)(x-2)}$

22) $\frac{x^2+3x-4}{(x-2)(x+1)}$ 23) $\frac{3x+11}{(x+2)(x+7)}$ 24) $\frac{10x+36}{(x-2)(x+5)}$

25) $\frac{10x+34}{(x+3)(x+5)}$ 26) $\frac{x^2+3x+30}{(x+6)(x-2)}$ 27) $\frac{x^2+2x+6}{(x+1)(x-4)}$

28) $\frac{8x+14}{(x-7)(x+3)}$ 29) $\frac{15x+25}{(x-1)(x+4)}$ 30) $\frac{x^2+x-8}{(x-4)(x-1)}$

Answer key

31) $\frac{10x - 14}{(x - 2)(x + 4)}$ 32) $\frac{x^2 + 5x + 12}{(x + 2)(x - 1)}$ 33) $\frac{10x - 18}{(x + 1)(x - 3)}$

34) $\frac{x^2 + 11x + 36}{(x + 6)(x + 5)}$