

MAT 099 S# 6, 12, # 5, 1, 4, 7, 11, 15, 17, 23, 26, 29, 35, 37, 39, 46

5, 1-10 Add/ Subtract as indicated

$$\textcircled{1} \quad \frac{2}{x^2} - \frac{5}{x^2} = \frac{2-5}{x^2} = \boxed{-\frac{3}{x^2}}$$

$$\textcircled{4} \quad \frac{x}{5-x} + \frac{7}{5-x} = \boxed{\frac{x+7}{5-x}}$$

$$\textcircled{7} \quad \frac{2x-6}{x^2+x-6} + \frac{3-3x}{x^2+x-6} = \frac{2x-6+3-3x}{x^2+x-6}$$

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

11-22 Find the LCD

$$\textcircled{11} \quad \frac{2}{7}, \frac{3}{5x} \Rightarrow \text{LCD} = 7 \cdot 5 \cdot x = 35x$$

$$\textcircled{15} \quad \frac{12}{x+7}, \frac{8}{x-7} \Rightarrow \text{LCD} = (x+7)(x-7)$$

$$\textcircled{17} \quad \frac{5}{3x+6}, \frac{2x}{2x-4} \quad \begin{array}{l} 3x+6 = 3(x+2) \\ 2x-4 = 2(x-2) \\ \Rightarrow \text{LCD} = 2 \cdot 3 \cdot (x+2)(x-2) \\ \text{OR } 6(x+2)(x-2) \end{array}$$

23-30 Add or Subtract.

$$\textcircled{23} \quad \frac{4}{3x} + \frac{3}{2x} = \frac{4}{3x} \cdot \frac{2}{2} + \frac{3}{2x} \cdot \frac{3}{3} \quad \text{LCD} = 2 \cdot 3 \cdot x$$

$$= \frac{8+9}{2 \cdot 3 \cdot x} = \boxed{\frac{17}{6x}}$$

MAT 099 S[#] 6.2 # 26, 29, 35, 37, 39, 46

(26) $\frac{4}{11x^4} - \frac{1}{4x^2}$

LCD = $4 \cdot 11x^4$

$$= \frac{4}{11x^4} \cdot \frac{4}{4} - \frac{1}{4x^2} \cdot \frac{11x^2}{11x^2} = \boxed{\frac{16 - 11x^2}{11x^4}}$$

(29) $\frac{1}{x-5} - \frac{19-2x}{(x-5)(x+4)}$

LCD = $(x-5)(x+4)$

$$= \frac{1}{x-5} \cdot \frac{x+4}{x+4} - \frac{19-2x}{(x-5)(x+4)} = \frac{x+4 - (19-2x)}{(x-5)(x+4)}$$

$$= \frac{x+4-19+2x}{(x-5)(x+4)} = \frac{3x-15}{(x-5)(x+4)} = \frac{\cancel{3(x-5)}}{(x-5)(x+4)} = \boxed{\frac{3}{x+4}}$$

(35) $\frac{5}{x-2} + \frac{x+4}{2-x} = \frac{5}{x-2} + \frac{4}{-1(x-2)}$

$$= \frac{5}{x-2} - \frac{4}{x-2} = \frac{5-4}{x-2} = \boxed{\frac{1}{x-2}}$$

#s 37-46 Perform each indicated operation. Simplify, if possible.

(37) $\frac{y+1}{y^2-6y+8} - \frac{3}{y^2-16} = \frac{y+1}{(y-4)(y-2)} - \frac{3}{(y+4)(y-4)}$

(LCD = $(y-2)(y-4)(y+4)$)

$$= \frac{y+1}{(y-4)(y-2)} \cdot \frac{y+4}{y+4} - \frac{3}{(y+4)(y-4)} \cdot \frac{y-2}{y-2} = \text{cancel'd}$$

MAT 999 $\sum 6, 2 + 5, 37, 39, 46$

$$\textcircled{37} \dots = \frac{(y+1)(y+4) - 3(y-2)}{(y+4)(y-4)(y-2)}$$

$$= \frac{y^2 + 5y + 4 - 3y + 6}{(y+4)(y-4)(y-2)} = \boxed{\frac{y^2 + 2y + 10}{(y+4)(y-4)(y-2)}}$$

$$\textcircled{39} \frac{x+4}{3x^2+11x+6} + \frac{x}{2x^2+x-15}$$

$$3x^2 + 11x + 6$$

$$(6)(3) = 18$$

$$(9)(2) = 18 \quad 9+2=11$$

$$3x^2 + 9x + 2x + 6$$

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

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

$$\text{LCD} = (x+3)(3x+2)(2x-5)$$

$$\frac{x+4}{(x+3)(3x+2)} \cdot \frac{2x-5}{2x-5} + \frac{x}{(x+3)(2x-5)} \cdot \frac{3x+2}{3x+2}$$

$$= \frac{(x+4)(2x-5) + x(3x+2)}{(x+3)(2x-5)(3x+2)} = \frac{2x^2 + 3x - 20 + 3x^2 + 2x}{(x+3)(2x-5)(3x+2)}$$

$$= \frac{5x^2 + 5x - 20}{(x+3)(2x-5)(3x+2)} = \boxed{\frac{5(x^2 + x - 4)}{(x+3)(2x-5)(3x+2)}}$$

$$2x^2 + x - 15$$

$$(2)(-15) = -30$$

$$(6)(-5) = -30, \quad 6x - 5x = 1x$$

$$2x^2 + 6x - 5x - 15$$

$$= 2x(x+3) - 5(x+3)$$

$$= (x+3)(2x-5)$$

099 §6.2 # 46

$$\textcircled{46} \quad \frac{9x+2}{3x^2-2x-8} + \frac{7}{3x^2+x-4}$$

$$3x^2-2x-8$$

$$(3)(-8) = -24$$

$$(-6)(4) = -24$$

$$-6x+4x = -2x$$

$$3x^2-6x+4x-8$$

$$= 3x(x-2)+4(x-2)$$

$$= (x-2)(3x+4)$$

$$3x^2+x-4$$

$$(3)(-4) = -12$$

$$(4)(-3) = -12$$

$$+x-3x = -2x$$

$$3x^2-2x-4$$

$$= x(3x-4)-1(3x-4)$$

$$= (3x-4)(x-1)$$

$$\text{LCD} = (x-2)(x-1)(3x+4)$$

$$= \frac{9x+2}{(x-2)(3x+4)} \cdot \frac{x-1}{x-1} + \frac{7}{(3x-4)(x-1)} \cdot \frac{x-2}{x-2}$$

$$= \frac{(9x+2)(x-1) + 7(x-2)}{(x-2)(x-1)(3x+4)} = \frac{9x^2-7x-2+7x-14}{(x-2)(x-1)(3x+4)}$$

$$(9)(-16) = -144$$

$$= \frac{9x^2-16}{(x-2)(x-1)(3x+4)}$$

$$= \frac{(3x-4)(3x+4)}{(x-2)(x-1)(3x+4)}$$

$$= \boxed{\frac{3x-4}{(x-2)(x-1)}}$$

$$\begin{array}{r} 2 \overline{)144} \\ 2 \overline{)72} \\ 2 \overline{)36} \\ 2 \overline{)18} \\ 3 \overline{)9} \\ 3 \end{array}$$