



Algebraic Expressions and Identities Ex 6.2 Q7

Answer :

$$\begin{aligned}
 \text{(i)} \quad & x^2 - 3x + 5 - \frac{1}{2} (3x^2 - 5x + 7) \\
 &= x^2 - 3x + 5 - \frac{3x^2}{2} + \frac{5x}{2} - \frac{7}{2} \\
 &= x^2 - \frac{3x^2}{2} - 3x + \frac{5x}{2} + 5 - \frac{7}{2} \quad \text{(Collecting like terms)} \\
 &= \left(\frac{1-3}{2} \right) x^2 + \left(\frac{-3+5}{2} \right) x + \left(\frac{10-7}{2} \right) \\
 &= -\frac{x^2}{2} - \frac{x}{2} + \frac{3}{2}
 \end{aligned}$$

Thus, the answer is $-\frac{x^2}{2} - \frac{x}{2} + \frac{3}{2}$.

$$\begin{aligned}
 \text{(ii)} \quad & [5 - 3x + 2y - (2x - y)] - (3x - 7y + 9) \\
 &= [5 - 3x + 2y - 2x + y] - (3x - 7y + 9) \\
 &= [5 - 5x + 3y] - (3x - 7y + 9) \\
 &= 5 - 5x + 3y - 3x + 7y - 9 \\
 &= 5 - 9 - 5x - 3x + 3y + 7y \\
 &= -4 - 8x + 10y
 \end{aligned}$$

$$\begin{aligned}
 \text{(iii)} \quad & \frac{11}{2} x^2 y - \frac{9}{4} xy^2 + \frac{1}{4} xy - \frac{1}{14} y^2 x + \frac{1}{15} yx^2 + \frac{1}{2} xy \\
 &= \frac{11}{2} x^2 y + \frac{1}{15} yx^2 - \frac{9}{4} xy^2 - \frac{1}{14} y^2 x + \frac{1}{4} xy + \frac{1}{2} xy \quad \text{(Collecting like terms)} \\
 &= \left(\frac{165+2}{30} \right) x^2 y + \left(\frac{-63-2}{28} \right) xy^2 + \left(\frac{1+2}{4} \right) xy \\
 &= \frac{167}{30} x^2 y - \frac{65}{28} y^2 x + \frac{3}{2} xy \quad \text{(Combining like terms)}
 \end{aligned}$$

$$\begin{aligned}
 \text{(iv)} \quad & \left(\frac{1}{3} y^2 - \frac{4}{7} y + 11 \right) - \left(\frac{1}{7} y - 3 + 2y^2 \right) - \left(\frac{2}{7} y - \frac{2}{3} y^2 + 2 \right) \\
 &= \frac{1}{3} y^2 - \frac{4}{7} y + 11 - \frac{1}{7} y + 3 - 2y^2 - \frac{2}{7} y + \frac{2}{3} y^2 - 2 \\
 &= \frac{1}{3} y^2 - 2y^2 + \frac{2}{3} y^2 - \frac{4}{7} y - \frac{1}{7} y - \frac{2}{7} y + 11 + 3 - 2 \quad \text{(Collecting like terms)} \\
 &= \left(\frac{1-6+2}{3} \right) y^2 + \left(\frac{-4-1-2}{7} \right) y + 12 \\
 &= -y^2 - 7y + 12 \quad \text{(Combining like terms)}
 \end{aligned}$$

$$\begin{aligned}
 \text{(v)} \quad & -\frac{1}{2} a^2 b^2 c + \frac{1}{3} ab^2 c - \frac{1}{4} abc^2 - \frac{1}{5} cb^2 a^2 + \frac{1}{6} cb^2 a - \frac{1}{7} c^2 ab + \frac{1}{8} ca^2 b \\
 &= -\frac{1}{2} a^2 b^2 c - \frac{1}{5} cb^2 a^2 + \frac{1}{3} ab^2 c + \frac{1}{6} cb^2 a - \frac{1}{4} abc^2 - \frac{1}{7} c^2 ab + \frac{1}{8} ca^2 b \quad \text{(Collecting like terms)} \\
 &= \left(\frac{-5-2}{10} \right) a^2 b^2 c + \left(\frac{2+1}{6} \right) cb^2 a^2 + \left(\frac{-7-4}{28} \right) c^2 ab + \frac{1}{8} ca^2 b \\
 &= -\frac{7}{10} a^2 b^2 c + \frac{1}{2} ab^2 c - \frac{11}{28} abc^2 + \frac{1}{8} a^2 bc \quad \text{(Combining like terms)}
 \end{aligned}$$

***** END *****