

$$\begin{aligned}
 \textcircled{5} \quad & (2x-5y)^3 - (2x+5y)^3 \\
 &= (2x)^3 - (5y)^3 - 3 \times 2x \times 5y(2x-5y) \\
 &\quad - [(2x)^3 + (5y)^3 + 3 \times 2x \times 5y(2x+5y)] \\
 &= \cancel{8x^3} - 125y^3 - 30xy(2x-5y) - \cancel{8x^3} - 125y^3 - 30xy(2x+5y) \\
 &= \cancel{-250y^3} - \cancel{60x^2y} + 150xy^2 + \cancel{60x^2y} + \cancel{150xy^2} \\
 &= -250y^3 + 300xy^2 \\
 &= -250y^3 - 60x^2y + 150xy^2 - 60x^2y - 150xy^2 \\
 &= -250y^3 - 12x^2y
 \end{aligned}$$

$$\begin{aligned}
 \textcircled{6} \quad & (x^2 + 4y^2 + z^2 + 2xy + xz - 2yz)(-z + x - 2y) \\
 &= [x + (-2y) + (-z)] [x^2 + (-2y)^2 + (-z)^2 - x(-2y) - (-2y)(-z) - (-z)x] \\
 &= x^3 + (-2y)^3 + (-z)^3 - 3 \times x(-2y)(-z) \\
 &= x^3 - 8y^3 - z^3 - 6xyz
 \end{aligned}$$

$$\begin{aligned}
 \textcircled{7} \quad \text{LHS} &= \frac{a^2}{bc} + \frac{b^2}{ca} + \frac{c^2}{ab} \\
 &= \frac{a^3 + b^3 + c^3}{abc}
 \end{aligned}$$

$$= \frac{3abc}{abc} \quad [ \because a+b+c=0 \text{ (given)} ]$$

$$= 3$$

$$= \text{RHS}$$