

$$\begin{aligned}
 4(i) (x+2y+4z)^2 &= x^2 + (2y)^2 + (4z)^2 + 2 \times x \times 2y + 2 \times 2y \times 4z + 2 \times 4z \times x \\
 &= x^2 + 4y^2 + 16z^2 + 4xy + 16yz + 8zx
 \end{aligned}$$

$$\begin{aligned}
 4(ii) (2x-y+z)^2 &= (2x)^2 + (-y)^2 + z^2 + 2 \times 2x(-y) + 2(-y)z + 2 \times z \times 2x \\
 &= 4x^2 + y^2 + z^2 - 4xy - 2yz + 4zx
 \end{aligned}$$

$$\begin{aligned}
 4(iii) (-2x+3y+2z)^2 &= (-2x)^2 + (3y)^2 + (2z)^2 + 2 \times (-2x)3y + 2 \times 3y \times 2z + 2 \times 2z(-2x) \\
 &= 4x^2 + 9y^2 + 4z^2 - 12xy + 12yz - 8zx
 \end{aligned}$$

$$\begin{aligned}
 4(iv) (3a-7b-c)^2 &= (3a)^2 + (-7b)^2 + (-c)^2 + 2 \times 3a(-7b) + 2(-7b)(-c) + 2(-c) \times 3a \\
 &= 9a^2 + 49b^2 + c^2 - 42ab + 14bc - 6ca
 \end{aligned}$$

$$\begin{aligned}
 4(v) (-2x+5y-3z)^2 &= (-2x)^2 + (5y)^2 + (-3z)^2 + 2 \times (-2x)5y + 2 \times 5y(-3z) \\
 &\quad + 2(-3z)(-2x) \\
 &= 4x^2 + 25y^2 + 9z^2 - 20xy - 30yz + 12zx
 \end{aligned}$$

$$\begin{aligned}
 4(vi) \left[ \frac{1}{4}a - \frac{1}{2}b + 1 \right]^2 &= \left( \frac{1}{4}a \right)^2 + \left( -\frac{1}{2}b \right)^2 + 1^2 + 2 \times \frac{1}{4}a \times -\frac{1}{2}b + 2 \times -\frac{1}{2}b \times 1 + 2 \times 1 \times \frac{1}{4}a \\
 &= \frac{1}{16}a^2 + \frac{1}{4}b^2 + 1 - \frac{1}{4}ab - b + \frac{1}{2}a
 \end{aligned}$$