

$$\begin{aligned}
 3\text{(v)} & (x+y)(2x+y) + (x+2y)(x-y) \\
 & = 2x^2 + \cancel{xy} + 2xy + y^2 + x^2 - \cancel{xy} + 2xy - 2y^2 \\
 & = 3x^2 + 4xy - y^2
 \end{aligned}$$

$$\begin{aligned}
 3\text{(vi)} & (x+y)(x^2 - xy + y^2) \\
 & = x^3 - \cancel{x^2y} + \cancel{xy^2} + \cancel{x^2y} - \cancel{xy^2} + y^3 \\
 & = x^3 + y^3
 \end{aligned}$$

$$\begin{aligned}
 3\text{(vii)} & (1.5x - 4y)(1.5x + 4y + 3) - 4.5x + 12y \\
 & = 2.25x^2 + 6\cancel{xy} + 4.5\cancel{x} - 6\cancel{xy} - 16y^2 - 7.2\cancel{y} \\
 & \quad - 4.5\cancel{x} + 12\cancel{y} \\
 & = 2.25x^2 - 16y^2
 \end{aligned}$$

$$\begin{aligned}
 3\text{(viii)} & (a+b+c)(a+b-c) \\
 & = a^2 + ab - \cancel{ac} + ab + b^2 - \cancel{bc} + \cancel{ac} + \cancel{bc} - c^2 \\
 & = a^2 + 2ab + b^2 - c^2
 \end{aligned}$$