

LHS

$$\begin{aligned}5 \text{ (i)} &= (a-b)(a+b) + (b-c)(b+c) + (c+a)(c-a) \\ &= a^2 - b^2 + b^2 - c^2 + c^2 - a^2 \\ &= 0 \\ &= RHS\end{aligned}$$

$$\begin{aligned}6 \text{ (i)} & 71^2 \\ &= (70+1)^2 \\ &= 70^2 + 2 \times 70 \times 1 + 1^2 \\ &= 4900 + 140 + 1 \\ &= 5041\end{aligned}$$

$$\begin{aligned}\text{(ii)} & 99^2 \\ &= (100-1)^2 \\ &= 100^2 + 1^2 - 2 \times 100 \times 1 \\ &= 10000 + 1 - 200 \\ &= 10001 - 200 \\ &= 9801\end{aligned}$$

$$\begin{aligned}\text{(iii)} & 102^2 \\ &= (100+2)^2 \\ &= 100^2 + 2 \times 100 \times 2 + 2^2 \\ &= 10000 + 400 + 4 \\ &= 10404\end{aligned}$$