


**Example 5**Expand and simplify  $(4a - 3b)(a + 2b) - (a + b)(a - b)$ **Solution:**

$$\begin{aligned}
& (4a - 3b)(a + 2b) - (a + b)(a - b) \\
&= 4a^2 + 8ab - 3ba - 6b^2 - (a^2 - b^2) \\
&= 4a^2 + 5ab - 6b^2 - a^2 + b^2 \\
&= 4a^2 - a^2 + 5ab - 6b^2 + b^2 \\
&= 3a^2 + 5ab - 5b^2 \quad (\text{ans})
\end{aligned}$$


**Example 6**Expand  $(3 - 4xy)^2$ **Solution:**

$$\begin{aligned}
& (3 - 4xy)^2 \\
&= 3^2 - 2(3)(4xy) + (4xy)^2 \\
&= 9 - 24xy + 16x^2y^2 \quad (\text{ans})
\end{aligned}$$

 Let  $a = 3$  and  $b = 4xy$   
 $(a - b)^2 = a^2 - 2ab + b^2$  is applied

**Example 7**Expand  $(3x - 5y)(3x + 5y)$ **Solution:**

$$\begin{aligned}
& (3x - 5y)(3x + 5y) \\
&= (3x)^2 - (5y)^2 \\
&= 9x^2 - 25y^2 \quad (\text{ans})
\end{aligned}$$

 Let  $a = 3x$  and  $b = 5y$   
 $(a + b)(a - b) = a^2 - b^2$  is applied

**Example 8**

Evaluate each of the following, using special products of algebraic expressions.

- (a)  $202^2$
- (b)  $45^2$
- (c)  $199 \times 201$