



## Exercise 7A

Q24

**Answer :**

We have:

$$\begin{aligned}
 (ax + by)^2 + (bx - ay)^2 &= (a^2x^2 + b^2y^2 + 2abxy) + (b^2x^2 + a^2y^2 - 2abxy) \\
 &= a^2x^2 + a^2y^2 + b^2y^2 + b^2x^2 + 2abxy - 2abxy \\
 &= a^2(x^2 + y^2) + b^2x^2 + b^2y^2 + 2abxy - 2abxy \\
 &= a^2(x^2 + y^2) + b^2(x^2 + y^2) \\
 &= (x^2 + y^2)(a^2 + b^2)
 \end{aligned}$$

$$\therefore (ax + by)^2 + (bx - ay)^2 = (x^2 + y^2)(a^2 + b^2)$$

Q25

**Answer :**

We have:

$$\begin{aligned}
 ab^2 + (a - 1)b - 1 &= ab^2 + ba - b - 1 \\
 &= (ab^2 + ba) - (b + 1) \\
 &= ab(b + 1) - 1(b + 1) \\
 &= (b + 1)(ab - 1)
 \end{aligned}$$

$$\therefore ab^2 + (a - 1)b - 1 = (b + 1)(ab - 1)$$

Q26

**Answer :**

We have:

$$\begin{aligned}
 x^3 - 3x^2 + x - 3 &= (x^3 - 3x^2) + (x - 3) \\
 &= x^2(x - 3) + 1(x - 3) \\
 &= (x - 3)(x^2 + 1)
 \end{aligned}$$

$$\therefore x^3 - 3x^2 + x - 3 = (x - 3)(x^2 + 1)$$

Q27

**Answer :**

We have:

$$\begin{aligned}
 ab(x^2 + y^2) - xy(a^2 + b^2) &= abx^2 + aby^2 - a^2xy - b^2xy \\
 &= abx^2 - a^2xy + aby^2 - b^2xy \\
 &= ax(bx - ay) + by(ay - bx) \\
 &= ax(bx - ay) - by(bx - ay) \\
 &= (bx - ay)(ax - by)
 \end{aligned}$$

$$\therefore ab(x^2 + y^2) - xy(a^2 + b^2) = (bx - ay)(ax - by)$$

Q28

**Answer :**

We have:

$$\begin{aligned}x^2 - x(a + 2b) + 2ab &= x^2 - ax - 2bx + 2ab \\&= x^2 - 2bx - ax + 2ab \\&= (x^2 - 2bx) - (ax - 2ab) \\&= x(x - 2b) - a(x - 2b) \\&= (x - 2b)(x - a)\end{aligned}$$

$$\therefore x^2 - x(a + 2b) + 2ab = (x - 2b)(x - a)$$

\*\*\*\*\* END \*\*\*\*\*