

# 5.2

## সূত্রের সাহায্যে গুণফল নির্ণয়

সূত্রের সাহায্যে গুণফল নির্ণয় কর:

১.  $(4x+3)(4x-3)$

সমাধান:

$$\begin{aligned}(4x+3)(4x-3) \\ &= (4x)^2 - (3)^2 \\ &= 16x^2 - 9\end{aligned}$$

২.  $(13-12p), (13+12p)$

সমাধান:

$$\begin{aligned}(13-12p)(13+12p) \\ &= (13)^2 - (12p)^2 \\ &= 169 - 144p^2\end{aligned}$$

৩.  $(ab+3), (ab-3)$

সমাধান:

$$\begin{aligned}(ab+3)(ab-3) \\ &= (ab)^2 - 3^2 \\ &= a^2b^2 - 9\end{aligned}$$

৪.  $(10-xy), (10+xy)$

সমাধান:

$$\begin{aligned}(10-xy)(10+xy) \\ &= (10)^2 - (xy)^2 \\ &= 100 - x^2y^2\end{aligned}$$

**৫.  $(4x^2+3y^2), (4x^2-3y^2)$**

সমাধানঃ

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

**৬.  $(a-b-c), (a+b+c)$**

সমাধানঃ

$$\begin{aligned} & (a-b-c)(a+b+c) \\ &= \{(a-(b+c))\}\{a+(b+c)\} \\ &= (a^2 - (b+c)^2) \\ &= a^2 - (b^2 + 2bc + c^2) \\ &= a^2 - b^2 - c^2 - 2bc \end{aligned}$$

**৭.  $(x^2-x+1), (x^2+x+1)$**

সমাধানঃ

$$\begin{aligned} & (x^2-x+1)(x^2+x+1) \\ &= \{(x^2+1)-x\}\{(x^2+1)+x\} \\ &= (x^2+1)^2 - x^2 \\ &= (x^2)^2 + 2 \times x^2 \times 1 + 1^2 - x^2 \\ &= x^4 + 2x^2 + 1 - x^2 \\ &= x^4 + x^2 + 1 \end{aligned}$$

**৮.  $(x-a/2), (x-5a/2)$**

সমাধানঃ

$$\begin{aligned} & (x-a/2)(x-5a/2) \\ &= (x)^2 + (-a/2-5a/2)x + (-a/2) \times (5a/2) \\ &= x^2 + (-3a)x + 5a^2/4 \\ &= x^2 - 3ax + 5a^2/4 \end{aligned}$$

**৯.  $(x/4-y/3), (x/4+y/3)$**

সমাধানঃ

$$\begin{aligned} & (x/4-y/3)(x/4+y/3) \\ &= (x/4)^2 - (y/3)^2 \\ &= x^2/16 - y^2/9 \end{aligned}$$

**১০.  $(a^4+3a^2x^2+9x^4), (9x^4-3a^2x^2+a^4)$**

সমাধানঃ

$$\begin{aligned} & (a^4+3a^2x^2+9x^4)(9x^4-3a^2x^2+a^4) \\ &= \{(a^4+9x^4)+3a^2x^2\}\{(a^4+9x^4)-3a^2x^2\} \\ &= (a^4+9x^4)^2 - (3a^2x^2)^2 \\ &= (a^4)^2 + 2 \times a^4 \times 9x^4 + (9x^4)^2 - 9a^4x^4 \\ &= a^8 + 18a^4x^4 + 81x^8 - 9a^4x^4 \end{aligned}$$

$$= a^8 + 9a^4x^4 + 81x^8$$

**১১.  $(x+1), (x-1), (x^2+1)$**

সমাধানঃ

$$\begin{aligned} & (x+1)(x-1)(x^2+1) \\ &= \{(x)^2 - (1)^2\}(x^2+1) \\ &= (x^2-1)(x^2+1) \\ &= (x^2)^2 - 1^2 \\ &= x^4 - 1 \end{aligned}$$

**১২.  $(9a^2+b^2), (3a+b)(3a-b)$**

সমাধানঃ

$$\begin{aligned} & (9a^2+b^2)(3a+b)(3a-b) \\ &= (9a^2+b^2)\{(3a)^2 - (b)^2\} \\ &= (9a^2+b^2)(9a^2+b^2) \\ &= (9a^2)^2 + (b^2)^2 \\ &= 81a^4 + b^4 \end{aligned}$$