

পঞ্চম অধ্যায় 5.2

ভগ্নাংশের গুণ ও ভাগ

উদাহরণ ৮। গুণ কর :

(ক) $\frac{a^2b^2}{cd}$ কে $\frac{ab}{c^2d^2}$ দ্বারা

সমাধান :

$$\begin{aligned}\text{নির্ণেয় গুণফল} &= \frac{a^2b^2}{cd} \times \frac{ab}{c^2d^2} \\ &= \frac{a^2b^2 \times ab}{cd \times c^2d^2} \\ &= \frac{a^3b^3}{c^3d^3}\end{aligned}$$

(গ) $\frac{10x^5b^4z^3}{3x^2b^2z}$ কে $\frac{15y^5b^2z^2}{2y^2a^2x}$ দ্বারা

সমাধান :

$$\begin{aligned}\text{নির্ণেয় গুণফল} &= \frac{10x^5b^4z^3}{3x^2b^2z} \times \frac{15y^5b^2z^2}{2y^2a^2x} \\ &= \frac{10x^5b^4z^3 \times 15y^5b^2z^2}{3x^2b^2z \times 2y^2a^2x} \\ &= \frac{25x^5y^5z^5b^6}{x^3y^2za^2b^2} \\ &= \frac{25b^4x^2y^2z^4}{a^2}\end{aligned}$$

(খ) $\frac{x^2y^3}{xy^2}$ কে $\frac{x^3b}{ay^3}$ দ্বারা

সমাধান :

$$\begin{aligned}\text{নির্ণেয় গুণফল} &= \frac{x^2y^3}{xy^2} \times \frac{x^3b}{ay^3} \\ &= \frac{x^2y^3 \times x^3b}{xy^2 \times ay^3} \\ &= \frac{x^4b}{ay^2}\end{aligned}$$

(ঘ) $\frac{x^2 - y^2}{x^3 + y^3}$ কে $\frac{x^2 - xy + y^2}{x^3 - y^3}$ দ্বারা

সমাধান :

$$\begin{aligned}\text{নির্ণেয় গুণফল} &= \frac{x^2 - y^2}{x^3 + y^3} \times \frac{x^2 - xy + y^2}{x^3 - y^3} \\ &= \frac{(x - y)(x + y)(x^2 - xy + y^2)}{(x + y)(x^2 - xy + y^2)(x - y)(x^2 + xy + y^2)} \\ &= \frac{1}{(x^2 + xy + y^2)}\end{aligned}$$

(ঙ) $\frac{x^2 - 5x + 6}{x^2 - 9x + 20}$ কে $\frac{x-5}{x-3}$ দ্বারা

সমাধান :

$$\begin{aligned}\text{নির্ণেয় গুণফল} &= \frac{x^2 - 5x + 6}{x^2 - 9x + 20} \times \frac{x-5}{x-3} \\&= \frac{x^2 - 2x - 3 + 6}{x^2 - 4x - 5x + 20} \times \frac{x-5}{x-3} \\&= \frac{x^2 - 2x - 3 + 6}{x^2 - 4x - 5x + 20} \times \frac{x-5}{x-3} \\&= \frac{(x-2)(x-3)}{(x-4)(x-5)} \times \frac{(x-5)}{(x-3)} \\&= \frac{(x-2)(x-3)(x-5)}{(x-4)(x-5)(x-3)} \\&= \frac{x-2}{x-4}\end{aligned}$$

কাজ : গুণ কর :

১। $\frac{7a^2b}{36a^3b^2}$ কে $\frac{24ab^2}{35a^4b^5}$ দ্বারা

২। $\frac{x^2 + 3x - 4}{x^2 - 7x + 12}$ কে $\frac{x^2 - 9}{x^2 - 16}$ দ্বারা

১। $\frac{7a^2b}{36a^3b^2}$ কে $\frac{24ab^2}{35a^4b^5}$ দ্বারা

সমাধান :

$$\begin{aligned}\text{নির্ণেয় গুণফল} &= \frac{7a^2b}{36a^3b^2} \times \frac{24ab^2}{35a^4b^5} \\&= \frac{7a^2b \times 24ab^2}{36a^3b^2 \times 35a^4b^5} = \frac{4}{30a^4b^4}\end{aligned}$$

২। $\frac{x^2+3x-4}{x^2-7x+12}$ কে $\frac{x^2-9}{x^2-16}$ দ্বারা

সমাধান :

$$\begin{aligned}\text{নির্ণেয় গুণফল} &= \frac{x^2+3x-4}{x^2-7x+12} \times \frac{x^2-9}{x^2-16} \\ &= \frac{x^2+4x-x-4}{x^2-3x-4x+12} \times \frac{x^2-3^2}{x^2-4^2} \\ &= \frac{(x+4)(x-1)}{(x-3)(x-4)} \times \frac{(x-3)(x+3)}{(x-4)(x+4)} \\ &= \frac{(x+4)(x-1)(x-3)(x+3)}{(x-3)(x-4)(x-4)(x+4)} \\ &= \frac{(x-1)(x+3)}{(x-4)^2}\end{aligned}$$

উদাহরণ ৯। ভাগ কর :

(ক) $\frac{a^3b^2}{c^2d}$ কে $\frac{a^2b^3}{cd^3}$ দ্বারা

(খ) $\frac{12a^4x^3y^2}{10x^4y^3z^2}$ কে $\frac{6a^3x^2c}{5x^2y^2z^2}$ দ্বারা

(গ) $\frac{a^2-b^2}{a^2+ab+b^2}$ কে $\frac{a+b}{a^3-b^3}$ দ্বারা

(ঘ) $\frac{x^3-27}{x^2-7x+6}$ কে $\frac{x^2-9}{x^2-36}$ দ্বারা

(ঙ) $\frac{x^3-y^3}{x^3+y^3}$ কে $\frac{x^2-y^2}{(x+y)^2}$ দ্বারা

সমাধান :

(ক) $\frac{a^3b^2}{c^2d}$ কে $\frac{a^2b^3}{cd^3}$ দ্বারা

(ক) ১ম ভগ্নাংশ $= \frac{a^3b^2}{c^2d}$

২য় ভগ্নাংশ $= \frac{a^2b^3}{cd^3}$

(খ) নির্ণেয় ভাগফল $= \frac{12a^4x^3y^2}{10x^4y^3z^2} \div \frac{6a^3x^2c}{5x^2y^2z^2}$
 $= \frac{12a^4x^3y^2}{10x^4y^3z^2} \times \frac{5x^2y^2z^2}{6a^3x^2c}$
 $= \frac{axy}{b^2c}$

২য় ভগ্নাংশের গুণাত্মক বিপরীত হলো $= \frac{cd^3}{a^2b^3}$

$$\begin{aligned}\text{নির্ণেয় ভাগফল} &= \frac{a^3b^2}{c^2d} \div \frac{a^2b^3}{cd^3} \\ &= \frac{a^3b^2}{c^2d} \times \frac{cd^3}{a^2b^3} \\ &= \frac{a^3b^2cd^3}{a^2b^3c^2d} \\ &= \frac{ad^2}{bc}\end{aligned}$$

$$\begin{aligned}\text{(ঘ) নির্ণেয় ভাগফল} &= \frac{x^3 - 27}{x^2 - 7x + 6} \div \frac{x^2 - 9}{x^2 - 36} \\ &= \frac{x^3 - 3^3}{x^2 - 6x - x + 6} \times \frac{x^2 - 6^2}{x^2 - 3^2} \\ &= \frac{(x-3)(x^2 + 3x + 3^2)}{(x-6)(x-1)} \times \frac{(x-6)(x+6)}{(x-3)(x+3)} \\ &= \frac{(x^2 + 3x + 9)(x+6)}{(x-1)(x+3)}\end{aligned}$$

(খ) নির্ণেয় ভাগফল

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

$$\begin{aligned}\text{(ঘ) নির্ণেয় ভাগফল} &= \frac{x^3 - y^3}{x^3 + y^3} \div \frac{x^2 - y^2}{(x+y)^2} \\ &= \frac{(x-y)(x^2 + xy + y^2)}{(x+y)(x^2 - xy + y^2)} \times \frac{(x+y)(x+y)}{(x-y)(x+y)} \\ &= \frac{(x^2 + xy + y^2)}{(x^2 - xy + y^2)}\end{aligned}$$

কাজ : ভাগ কর :

$$১. \frac{16a^2b^2}{21z^2} \text{ কে } \frac{28ab^4}{35xyz} \text{ দ্বারা} \quad ২. \frac{x^4 - y^4}{x^2 - 2x + y^2} \text{ কে } \frac{x^3 + y^3}{x - y} \text{ দ্বারা}$$

সমাধান :

$$\begin{aligned} (১) \text{ নির্ণেয় ভাগফল} &= \frac{16a^2b^2}{21z^2} \div \frac{28ab^4}{35xyz} \\ &= \frac{16a^2b^2}{21z^2} \times \frac{35xyz}{28ab^4} \\ &= \frac{20axy}{21zb^2} \end{aligned}$$

সমাধান :

$$\begin{aligned} (২) \text{ নির্ণেয় ভাগফল} &= \frac{x^4 - y^4}{x^2 - 2xy + y^2} \div \frac{x^3 + y^3}{x - y} \\ &= \frac{(x^2 + y^2)(x^2 - y^2)}{(x - y)^2} \times \frac{x - y}{x^3 + y^3} \\ &= \frac{(x - y)(x + y)(x^2 + y^2)}{(x - y)(x - y)} \times \frac{(x - y)}{(x + y)(x^2 - xy + y^2)} \\ &= \frac{(x^2 + y^2)}{(x^2 - xy + y^2)} \end{aligned}$$

উদাহরণ ১০। সরল কর :

$$(ক) \left(1 + \frac{1}{x}\right) \div \left(1 - \frac{1}{x^2}\right)$$

$$(খ) \left(\frac{x}{x+y} + \frac{y}{x-y}\right) \div \left(\frac{x}{x-y} - \frac{y}{x+y}\right)$$

$$(গ) \frac{a^3 + b^3}{(a-b)^2 + 3ab} \div \frac{(a+b)^2 - 3ab}{a^3 - b^3} \times \frac{a+b}{a-b}$$

$$(ঘ) \frac{x^2 + 3x - 4}{x^2 - 7x + 12} \div \frac{x^2 - 16}{x^2 - 9} \times \frac{(x-4)^2}{(x-1)^2}$$

$$(ঙ) \frac{x^3 + y^3 + 3xy(x+y)}{(x+y)^2 - 4xy} \div \frac{(x-y)^2 + 4xy}{x^3 - y^3 - 3xy(x-y)}$$

সমাধান : (ক)

$$\begin{aligned}
 & \left(1 + \frac{1}{x}\right) \div \left(1 - \frac{1}{x^2}\right) \\
 &= \frac{x+1}{x} \div \frac{x^2-1}{x^2} \\
 &= \frac{(x+1)}{x} \times \frac{x^2}{(x-1)(x+1)} \\
 &= \frac{x}{x-1}
 \end{aligned}$$

সমাধান : (খ)

$$\begin{aligned}
 & \left(\frac{x}{x+y} + \frac{y}{x-y}\right) \div \left(\frac{x}{x-y} - \frac{y}{x+y}\right) \\
 &= \frac{x(x-y) + y(x+y)}{(x+y)(x-y)} \div \frac{x(x+y) - y(x-y)}{(x-y)(x+y)} \\
 &= \frac{x^2 - xy + xy + y^2}{(x^2 - y^2)} \div \frac{x^2 + xy - yx + y^2}{(x^2 - y^2)} \\
 &= \frac{x^2 + y^2}{(x^2 - y^2)} \div \frac{x^2 + y^2}{(x^2 - y^2)} \\
 &= \frac{(x^2 + y^2)}{(x^2 - y^2)} \times \frac{(x^2 - y^2)}{(x^2 + y^2)} \\
 &= 1
 \end{aligned}$$

সমাধান : (গ)

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

সমাধান : (ঘ)

$$\begin{aligned}& \frac{x^2 + 3x - 4}{x^2 - 7x + 12} \div \frac{x^2 - 16}{x^2 - 9} \times \frac{(x-4)^2}{(x-1)^2} \\&= \frac{x^2 + 4x - x - 4}{x^2 - 3x - 4x + 12} \times \frac{x^2 - 3^2}{x^2 - 4^2} \times \frac{(x-4)^2}{(x-1)^2} \\&= \frac{(x+4)(x-1)}{(x-3)(x-4)} \times \frac{(x-3)(x+3)}{(x-4)(x+4)} \times \frac{(x-4)(x-4)}{(x-1)(x-1)} \\&= \frac{x+3}{x-1}\end{aligned}$$

সমাধান : (ঙ)

$$\begin{aligned}& \frac{x^3 + y^3 + 3xy(x+y)}{(x+y)^2 - 4xy} \div \frac{(x-y)^2 + 4xy}{x^3 - y^3 - 3xy(x-y)} \\&= \frac{(x+y)^3}{x^2 + 2xy + y^2 - 4xy} \div \frac{x^2 - 2xy + y^2 + 4xy}{(x-y)^3} \\&= \frac{(x+y)^3}{x^2 - 2xy + y^2} \div \frac{x^2 + 2xy + y^2}{(x-y)^3} \\&= \frac{(x+y)^3}{(x-y)^2} \times \frac{(x-y)^3}{(x+y)^2} \\&= (x+y)(x-y) \\&= x^2 - y^2\end{aligned}$$

অনুশীলনী ৫.২

১। $\frac{a}{x}, \frac{b}{y}, \frac{c}{z}, \frac{p}{q}$ কে সাধারণ হ্রবিশিষ্ট করলে নিচের কোনটি সঠিক?

(ক) $\frac{ayzq}{xyzq}, \frac{bxzq}{xyzq}, \frac{cxyq}{xyzq}, \frac{pxyz}{xyzq}$

(খ) $\frac{axy}{xyzq}, \frac{byz}{xyzq}, \frac{czx}{xyzq}, \frac{pxy}{xyzq}$

(গ) $\frac{a}{xyzq}, \frac{b}{xyzq}, \frac{c}{xyzq}, \frac{p}{xyzq}$

(ঘ) $\frac{axyzq}{xyzq}, \frac{bxzq}{xyzq}, \frac{cxyq}{xyzq}, \frac{pxyzq}{xyzq}$

২। $\frac{x^2y^2}{ab}$ ও $\frac{c^3d^2}{x^5y^3}$ এর গুণফল কত হবে?

(ক) $\frac{x^2y^2c^3d^2}{abx^3y^2}$ (খ) $\frac{c^3d^2}{abx^3y}$ (গ) $\frac{x^2y^2c^3}{x^3y}$ (ঘ) $\frac{xyd^3}{ab}$

৩। $\frac{x^2-2x+1}{a^2-2a+1}$ ও $\frac{x-1}{a-1}$ দ্বারা ভাগ করলে ভাগফল কত হবে?

(ক) $\frac{x+1}{a-1}$ (খ) $\frac{x-1}{a-1}$ (গ) $\frac{x-1}{a+1}$ (ঘ) $\frac{x-1}{a-1}$

৪। $\frac{a^2-b^2}{(a+b)^2} \div \frac{(a+b)^2-4ab}{a^3+b^3} \times \frac{a+b}{a^2-ab+b^2}$ এর সরলকৃত মান কত হবে?

(ক) $\frac{a-b}{a+b}$ (খ) $\frac{a+b}{a-b}$ (গ) $(a-b)$ (ঘ) $(a+b)$

৫। নিচের বাম দিকের তথ্যের সাথে ডানদিকের তথ্যের মিল কর :

(ক) সাধারণ হ্রবিশিষ্ট ভগ্নাংশের হ্র

(ক) $x-y$

(খ) $\frac{(x+y)^2}{x^2-y^2} \times \frac{(x-y)^2}{(x+y)}$

(খ) 1

(গ) $\frac{x^2-y^2}{x+y} \div \frac{x-y}{(x+y)} \times \frac{1}{x+y}$

(গ) হ্রগুলোর ল.সা.গু.

(ঘ) $\frac{(x+y)^2}{x-y} \div \frac{x-y}{x+y} \times \frac{(x-y)^3}{x^2-y^2}$

(ঘ) $(x+y)^2$

সমাধান :

(ক) সাধারণ হরবিশিষ্ট ভগ্নাংশের হর $\longrightarrow$ (গ) হরগুলোর ল.সা.গু.

(খ) $\frac{(x+y)^2}{x^2-y^2} \times \frac{(x-y)^2}{(x+y)} \longrightarrow$ (ক) $x-y$

(গ) $\frac{x^2-y^2}{x+y} \div \frac{x-y}{(x+y)} \times \frac{1}{x+y} \longrightarrow$ (খ) 1

(ঘ) $\frac{(x+y)^2}{x-y} \div \frac{x-y}{x+y} \times \frac{(x-y)^3}{x^2-y^2} \longrightarrow$ (ঘ) $(x+y)^2$

৬। গুণ কর :

(ক) $\frac{9x^2y^2}{7y^2z^2}, \frac{5b^2c^2}{7z^2x^2}$ এবং $\frac{7c^2a^2}{x^2y^2}$

(খ) $\frac{16a^2b^2}{21z^2}, \frac{28z^4}{9x^3y^4}$ এবং $\frac{3y^7z}{10x}$

(গ) $\frac{yz}{x^2}, \frac{xz}{y^2}$ এবং $\frac{xy}{z^2}$

(ঘ) $\frac{x-1}{x+1}, \frac{(x-1)^2}{x^2+x}$ এবং $\frac{x^2}{x^2-4x+5}$

(ঙ) $\frac{x^4-y^4}{x^2-2xy+y^2}, \frac{x-y}{x^3+y^3}$ এবং $\frac{x+y}{x^3+y^3}$

(চ) $\frac{1-b^2}{1+x}, \frac{1-x^2}{b+b^2}$ এবং $1+\frac{1-x}{x}$

(ছ) $\frac{x^2-3x+2}{x^2-4x+3}, \frac{x^2-5x+6}{x^2-7x+12}$ এবং $\frac{x^2-16}{x^2-9}$

(জ) $\frac{x^3+y^3}{a^2b+ab^2+b^3}, \frac{a^3-b^3}{x^2-xy+y^2}$ এবং $\frac{ab}{x+y}$

(ঝ) $\frac{x^3+y^3+3xy(x+y)}{(a+b)^3}, \frac{a^3+b^3+3ab(a+b)}{x^2-y^2}$ এবং $\frac{(x-y)^2}{(x+y)^2}$

$$(ক) \frac{9x^2y^2}{7y^2z^2}, \frac{5b^2c^2}{3z^2x^2} \text{ এবং } \frac{7c^2a^2}{x^2y^2}$$

সমাধান :

$$\frac{9x^2y^2}{7y^2z^2}, \frac{5b^2c^2}{3z^2x^2} \text{ এবং } \frac{7c^2a^2}{x^2y^2} \text{ এর গুণফল}$$

$$= \frac{9x^2y^2}{7y^2z^2} \times \frac{5b^2c^2}{3z^2x^2} \times \frac{7c^2a^2}{x^2y^2}$$

$$= \frac{15a^2b^2c^4}{x^2y^2z^4}$$

$$\text{নির্ণেয় গুণফল } \frac{15a^2b^2c^4}{x^2y^2z^4}$$

$$(গ) \frac{yz}{x^2}, \frac{xz}{y^2} \text{ এবং } \frac{xy}{z^2}$$

সমাধান :

$$\frac{yz}{x^2}, \frac{xz}{y^2} \text{ এবং } \frac{xy}{z^2} \text{ এর গুণফল}$$

$$= \frac{yz}{x^2} \times \frac{xz}{y^2} \times \frac{xy}{z^2}$$

$$= 1$$

নির্ণেয় গুণফল 1

$$(ঙ) \frac{x^4 - y^4}{x^2 - 2xy + y^2}, \frac{x - y}{x^3 + y^3} \text{ এবং } \frac{x + y}{x^3 + y^3}$$

সমাধান :

$$\frac{x^4 - y^4}{x^2 - 2xy + y^2}, \frac{x - y}{x^3 + y^3} \text{ এবং } \frac{x + y}{x^3 + y^3} \text{ এর গুণফল}$$

$$= \frac{(x^2 - y^2)(x^2 + y^2)(x - y)(x + y)}{(x - y)^2(x + y)(x^2 - xy + y^2)(x + y)(x^2 - xy + y^2)}$$

$$= \frac{(x^2 + y^2)}{(x^2 - xy + y^2)(x^2 - xy + y^2)}$$

$$(খ) \frac{16a^2b^2}{21z^2}, \frac{28z^4}{9x^3y^4} \text{ এবং } \frac{3y^7z}{10x}$$

সমাধান :

$$\frac{16a^2b^2}{21z^2}, \frac{28z^4}{9x^3y^4} \text{ এবং } \frac{3y^7z}{10x} \text{ এর গুণফল}$$

$$= \frac{16a^2b^2}{21z^2} \times \frac{28z^4}{9x^3y^4} \times \frac{3y^7z}{10x}$$

$$= \frac{32a^2b^2y^3z^3}{45z^4}$$

$$\text{নির্ণেয় গুণফল } \frac{15a^2b^2c^4}{x^2y^2z^4}$$

$$(ঘ) \frac{x-1}{x+1}, \frac{(x-1)^2}{x^2+x} \text{ এবং } \frac{x^2}{x^2-4x+5}$$

সমাধান :

$$\frac{x-1}{x+1}, \frac{(x-1)^2}{x^2+x} \text{ এবং } \frac{x^2}{x^2-4x+5} \text{ এর গুণফল}$$

$$= \frac{(x-1)}{(x+1)} \times \frac{(x-1)(x-1)}{x(x+1)} \times \frac{x^2}{x^2-4x+5}$$

$$= \frac{(x-1)(x-1)(x-1)}{(x+1)x(x+1)} \times \frac{x \times x}{(x^2-4x+5)}$$

$$= \frac{x(x-1)^3}{(x+1)^2(x^2-4x+5)}$$

$$\text{নির্ণেয় গুণফল } \frac{x(x-1)^3}{(x+1)^2(x^2-4x+5)}$$

$$= \frac{(x^2 + y^2)}{(x^2 - xy + y^2)^2}$$

নির্ণেয় গুণফল $\frac{(x^2 + y^2)}{(x^2 - xy + y^2)^2}$

(চ) $\frac{1-b^2}{1+x}, \frac{1-x^2}{b+b^2}$ এবং $\left(1 + \frac{1-x}{x}\right)$

সমাধান :

$$\frac{1-b^2}{1+x}, \frac{1-x^2}{b+b^2} \text{ এবং } \left(1 + \frac{1-x}{x}\right) \text{ এর গুণফল}$$

$$= \frac{1-b^2}{1+x} \times \frac{1-x^2}{b+b^2} \times \left(1 + \frac{1-x}{x}\right)$$

$$= \frac{(1-b)(1+b)(1-x)(1+x)}{(1+x)b(1+b)} \times \left(\frac{x+1-x}{x}\right)$$

$$= \frac{(1-b)(1-x)}{bx}$$

$$= \frac{(1-b)(1-x)}{bx}$$

নির্ণেয় গুণফল $\frac{(1-b)(1-x)}{bx}$

(ছ) $\frac{x^2 - 3x + 2}{x^2 - 4x + 3}, \frac{x^2 - 5x + 6}{x^2 - 7x + 12}$ এবং $\frac{x^2 - 16}{x^2 - 9}$

সমাধান :

$$\frac{x^2 - 3x + 2}{x^2 - 4x + 3}, \frac{x^2 - 5x + 6}{x^2 - 7x + 12} \text{ এবং } \frac{x^2 - 16}{x^2 - 9} \text{ এর গুণফল}$$

$$= \frac{x^2 - 3x + 2}{x^2 - 4x + 3} \times \frac{x^2 - 5x + 6}{x^2 - 7x + 12} \times \frac{x^2 - 16}{x^2 - 9}$$

$$= \frac{x^2 - x - 2x + 2}{x^2 - x - 3x + 3} \times \frac{x^2 - 2x - 3 + 6}{x^2 - 3x - 4x + 12} \times \frac{x^2 - 4^2}{x^2 - 3^2}$$

$$= \frac{(x-1)(x-2)}{(x-1)(x-3)} \times \frac{(x-2)(x-3)}{(x-3)(x-4)} \times \frac{(x-4)(x+4)}{(x-3)(x+3)}$$

$$= \frac{(x-1)(x-2)(x-2)(x-3)(x-4)(x+4)}{(x-1)(x-3)(x-3)(x-4)(x-3)(x+3)}$$

$$= \frac{(x-2)(x-2)(x+4)}{(x-3)(x-3)(x+3)}$$

$$= \frac{(x-2)^2(x+4)}{(x-3)^2(x+3)}$$

নির্ণেয় গুণফল $\frac{(x-2)^2(x+4)}{(x-3)^2(x+3)}$

(জ) $\frac{x^3 + y^3}{a^2b + ab^2 + b^3}, \frac{a^3 - b^3}{x^2 - xy + y^2}$ এবং $\frac{ab}{x+y}$

সমাধান :

$$\frac{x^3 + y^3}{a^2b + ab^2 + b^3}, \frac{a^3 - b^3}{x^2 - xy + y^2} \text{ এবং } \frac{ab}{x+y} \text{ এর গুণফল}$$

$$= \frac{(x+y)(x^2 - xy + y^2)}{b(a^2 + ab + b^2)} \times \frac{(a-b)(a^2 + ab + b^2)}{(x^2 - xy + y^2)} \times \frac{ab}{(x+y)}$$

$$= \frac{(x+y)(x^2 - xy + y^2)(a-b)(a^2 + ab + b^2)ab}{b(a^2 + ab + b^2)(x^2 - xy + y^2)(x+y)}$$

$$= a(a-b) \quad \text{নির্ণেয় গুণফল } a(a-b)$$

$$(ঝ) \frac{x^3 + y^3 + 3xy(x+y)}{(a+b)^3}, \frac{a^3 + b^3 + 3ab(a+b)}{x^2 - y^2} \text{ এবং } \frac{(x-y)^2}{(x+y)^2}$$

সমাধান :

$$\frac{x^3 + y^3 + 3xy(x+y)}{(a+b)^3}, \frac{a^3 + b^3 + 3ab(a+b)}{x^2 - y^2} \text{ এবং } \frac{(x-y)^2}{(x+y)^2} \text{ এর গুণফল}$$

$$= \frac{(x+y)^3}{(a+b)^3} \times \frac{(a+b)^3}{(x-y)(x+y)} \times \frac{(x-y)^2}{(x+y)^2}$$

$$= \frac{(x+y)^3(a+b)^3(x-y)^2}{(a+b)^3(x-y)(x+y)(x+y)^2}$$

$$= x-y$$

নির্ণেয় গুণফল $x-y$

৭। ভাগ কর : (প্রথম রাশিকে ২য় রাশি দ্বারা)

$$(ক) \frac{3x^2}{2a}, \frac{4y^2}{15zx}$$

$$(খ) \frac{9a^2b^2}{4c^2}, \frac{16a^2b}{3c^3}$$

$$(গ) \frac{21a^4b^4b^4}{4x^3y^3z^3}, \frac{7a^2b^2c^2}{12xyz}$$

$$(ঘ) \frac{x}{y}, \frac{x+y}{y}$$

$$(ঙ) \frac{(a+b)^2}{(a-b)^2}, \frac{a^2-b^2}{a+b}$$

$$(চ) \frac{x^3-y^3}{x+y}, \frac{x^2+xy+y^2}{x^2-y^2}$$

$$(ছ) \frac{a^3+b^3}{a-b}, \frac{a^2-ab+b^2}{a^2-b^2}$$

$$(জ) \frac{x^2-7x+12}{x^2-4}, \frac{x^2-16}{x^2-3x+2}$$

$$(ঝ) \frac{x^2-x-30}{x^2-36}, \frac{x^2+13x+40}{x^2+x-56}$$

$$(ক) \frac{3x^2}{2a}, \frac{4y^2}{15zx}$$

$$(খ) \frac{9a^2b^2}{4c^2}, \frac{16a^2b}{3c^3}$$

সমাধান :

$$\frac{3x^2}{2a} \div \frac{4y^2}{15zx}$$

$$= \frac{3x^2}{2a} \times \frac{15zx}{4y^2}$$

$$= \frac{45x^2z}{8ay^2}$$

নির্ণেয় ভাগফল

$$\frac{45x^2z}{8ay^2}$$

সমাধান :

$$\frac{9a^2b^2}{4c^2} \div \frac{16a^2b}{3c^3}$$

$$= \frac{9a^2b^2}{4c^2} \times \frac{3c^3}{16a^2b}$$

$$= \frac{27bc}{64a}$$

নির্ণেয় ভাগফল

$$\frac{27bc}{64a}$$

$$(গ) \frac{21a^4b^4b^4}{4x^3y^3z^3}, \frac{7a^2b^2c^2}{12xyz}$$

সমাধান :

$$\begin{aligned} & \frac{21a^4b^4b^4}{4x^3y^3z^3} \div \frac{7a^2b^2c^2}{12xyz} \\ &= \frac{21a^4b^4b^4}{4x^3y^3z^3} \times \frac{12xyz}{7a^2b^2c^2} \\ &= \frac{21a^4b^4b^4 \times 12xyz}{4x^3y^3z^3 \times 7a^2b^2c^2} \\ &= \frac{9a^2b^2b^2}{x^2y^2z^2} \end{aligned}$$

নির্ণেয় ভাগফল $\frac{9a^2b^2b^2}{x^2y^2z^2}$

$$(ঙ) \frac{(a+b)^2}{(a-b)^2}, \frac{a^2-b^2}{a+b}$$

সমাধান :

$$\begin{aligned} & \frac{(a+b)^2}{(a-b)^2} \div \frac{a^2-b^2}{a+b} \\ &= \frac{(a+b)^2}{(a-b)^2} \times \frac{a+b}{a^2-b^2} \\ &= \frac{(a+b)(a+b)(a+b)}{(a-b)(a-b)(a-b)(a+b)} \\ &= \frac{(a+b)^2}{(a-b)^3} \end{aligned}$$

নির্ণেয় ভাগফল $\frac{(a+b)^2}{(a-b)^3}$

$$(ঘ) \frac{x}{y}, \frac{x+y}{y}$$

সমাধান :

$$\begin{aligned} & \frac{x}{y} \div \frac{x+y}{y} \\ &= \frac{x}{y} \times \frac{y}{x+y} \\ &= \frac{x}{x+y} \end{aligned}$$

নির্ণেয় ভাগফল $\frac{x}{x+y}$

$$(চ) \frac{x^3-y^3}{x+y}, \frac{x^2+xy+y^2}{x^2-y^2}$$

সমাধান :

$$\begin{aligned} & \frac{x^3-y^3}{x+y} \div \frac{x^2+xy+y^2}{x^2-y^2} \\ &= \frac{(x-y)(x^2+xy+y^2)}{(x+y)} \times \frac{x^2-y^2}{x^2+xy+y^2} \\ &= \frac{(x-y)(x^2+xy+y^2)}{(x+y)} \times \frac{(x-y)(x+y)}{(x^2+xy+y^2)} \\ &= (x-y)(x-y) \\ &= (x-y)^2 \end{aligned}$$

নির্ণেয় ভাগফল $(x-y)^2$

$$(ছ) \frac{a^3 + b^3}{a - b}, \frac{a^2 - ab + b^2}{a^2 - b^2}$$

সমাধান :

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

নির্ণেয় ভাগফল $(a + b)^2$

$$(ঝ) \frac{x^2 - x - 30}{x^2 - 36}, \frac{x^2 + 13x + 40}{x^2 + x - 56}$$

সমাধান :

$$\begin{aligned} & \frac{x^2 - x - 30}{x^2 - 36} \div \frac{x^2 + 13x + 40}{x^2 + x - 56} \\ &= \frac{x^2 - 6x + 5x - 30}{x^2 - 6^2} \times \frac{x^2 + 8x - 7x - 56}{x^2 + 8x + 5x + 40} \\ &= \frac{(x - 6)(x + 5)}{(x - 6)(x + 6)} \times \frac{(x + 8)(x - 7)}{(x + 8)(x + 5)} \\ &= \frac{(x - 7)}{(x + 6)} \end{aligned}$$

নির্ণেয় ভাগফল $\frac{(x - 7)}{(x + 6)}$

$$(জ) \frac{x^2 - 7x + 12}{x^2 - 4}, \frac{x^2 - 16}{x^2 - 3x + 2}$$

সমাধান :

$$\begin{aligned} & \frac{x^2 - 7x + 12}{x^2 - 4} \div \frac{x^2 - 16}{x^2 - 3x + 2} \\ &= \frac{x^2 - 3x - 4x + 12}{x^2 - 2^2} \times \frac{x^2 - 2x - x + 2}{x^2 - 4^2} \\ &= \frac{(x - 3)(x - 4)}{(x - 2)(x + 2)} \times \frac{(x - 2)(x - 1)}{(x - 4)(x + 4)} \\ &= \frac{(x - 3)(x - 1)}{(x + 2)(x + 4)} \\ &= \frac{(x - 3)(x - 1)}{(x + 2)(x + 4)} \end{aligned}$$

নির্ণেয় ভাগফল $\frac{(x - 3)(x - 1)}{(x + 2)(x + 4)}$

৮। সরল কর :

$$(ক) \left(\frac{1}{x} + \frac{1}{y} \right) \times \left(\frac{1}{x} - \frac{1}{y} \right) \quad (খ) \left(\frac{1}{1+x} + \frac{2x}{1-x^2} \right) \left(\frac{1}{x} - \frac{1}{x^2} \right)$$

$$(গ) \left(1 - \frac{c}{a+b} \right) \left(\frac{a}{a+b+c} - \frac{a}{a+b-c} \right)$$

$$(ঘ) \left(\frac{1}{1+a} + \frac{a}{1-a} \right) \left(\frac{1}{1+a^2} - \frac{1}{1+a+a^2} \right)$$

$$(ঙ) \left(\frac{x}{2x-y} + \frac{x}{2x+y} \right) \left(4 + \frac{3y^2}{x^2-y^2} \right)$$

$$(চ) \left(\frac{2x+y}{x+y} - 1 \right) \div \left(1 - \frac{y}{x+y} \right)$$

$$(ছ) \left(\frac{a}{a+b} - \frac{b}{a-b} \right) \div \left(\frac{a}{a-b} - \frac{b}{a+b} \right)$$

$$(জ) \left(\frac{a^2+b^2}{2ab} - 1 \right) \div \left(\frac{a^3-b^3}{a-b} - 3ab \right)$$

$$(ঝ) \frac{(x+y)^2 - 4xy}{(a+b)^2 - 4ab} \div \frac{x^3 - y^3 - 3xy(x-y)}{a^3 - b^3 - 3ab(a-b)}$$

$$(ঞ) \left(\frac{a}{b} + \frac{b}{a} + 1 \right) \div \left(\frac{a^2}{b^2} + \frac{a}{b} + 1 \right)$$

$$(ক) \left(\frac{1}{x} + \frac{1}{y} \right) \times \left(\frac{1}{x} - \frac{1}{y} \right)$$

সমাধান :

$$\left(\frac{1}{x} + \frac{1}{y} \right) \times \left(\frac{1}{x} - \frac{1}{y} \right)$$

$$= \frac{y+x}{xy} \times \frac{y-x}{xy}$$

$$= \frac{y^2 - x^2}{x^2 y^2} \quad \text{নির্ণেয় সরলফল} \quad \frac{y^2 - x^2}{x^2 y^2}$$

$$(খ) \left(\frac{1}{1+x} + \frac{2x}{1-x^2} \right) \left(\frac{1}{x} - \frac{1}{x^2} \right)$$

সমাধান :

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

নির্ণেয় সরলফল $-\frac{1}{x^2}$

$$(গ) \left(1 - \frac{c}{a+b} \right) \left(\frac{a}{a+b+c} - \frac{a}{a+b-c} \right)$$

সমাধান :

$$\begin{aligned} & \left(1 - \frac{c}{a+b} \right) \left(\frac{a}{a+b+c} - \frac{a}{a+b-c} \right) \\ &= \left(\frac{a+b-c}{a+b} \right) \left\{ \frac{a(a+b-c) - a(a+b+c)}{(a+b+c)(a+b-c)} \right\} \\ &= \frac{(a+b-c)}{a+b} \times \frac{a^2 + ab - ca - a^2 - ab - ca}{(a+b+c)(a+b-c)} \\ &= \frac{-2ca}{(a+b)(a+b+c)} \end{aligned}$$

নির্ণেয় সরলফল $\frac{-2ca}{(a+b)(a+b+c)}$

$$(ঘ) \left(\frac{1}{1+a} + \frac{a}{1-a} \right) \left(\frac{1}{1+a^2} - \frac{1}{1+a+a^2} \right)$$

সমাধান :

$$\begin{aligned} & \left(\frac{1}{1+a} + \frac{a}{1-a} \right) \left(\frac{1}{1+a^2} - \frac{1}{1+a+a^2} \right) \\ &= \frac{1(1-a) + a(1+a)}{(1+a)(1-a)} \times \frac{1(1+a+a^2) - 1(1+a^2)}{(1+a^2)(1+a+a^2)} \\ &= \frac{1-a+a+a^2}{(1+a)(1-a)} \times \frac{1+a+a^2-1-a^2}{(1+a^2)(1+a+a^2)} \\ &= \frac{1+a^2}{(1+a)(1-a)} \times \frac{a}{(1+a^2)(1+a+a^2)} \\ &= \frac{a(1+a^2)}{(1+a)(1-a)(1+a^2)(1+a+a^2)} \\ & \text{নির্ণেয় সরলফল} \frac{a(1+a^2)}{(1+a)(1-a)(1+a^2)(1+a+a^2)} \end{aligned}$$

$$(ঙ) \left(\frac{x}{2x-y} + \frac{x}{2x+y} \right) \left(4 + \frac{3y^2}{x^2-y^2} \right)$$

সমাধান :

$$\begin{aligned} & \left(\frac{x}{2x-y} + \frac{x}{2x+y} \right) \left(4 + \frac{3y^2}{x^2-y^2} \right) \\ &= \frac{x(2x+y) + x(2x-y)}{(2x-y)(2x+y)} \times \frac{4(x^2-y^2) + 3y^2}{x^2-y^2} \\ &= \frac{4x^2}{(4x^2-y^2)} \times \frac{(4x^2-y^2)}{(x^2-y^2)} \\ &= \frac{4x^2}{(x^2-y^2)} \end{aligned}$$

$$\text{নির্ণেয় সরলফল} \frac{4x^2}{(x^2-y^2)}$$

$$(চ) \left(\frac{2x+y}{x+y} - 1 \right) \div \left(1 - \frac{y}{x+y} \right)$$

সমাধান :

$$\begin{aligned} & \left(\frac{2x+y}{x+y} - 1 \right) \div \left(1 - \frac{y}{x+y} \right) \\ &= \frac{2x+y-1(x+y)}{x+y} \div \frac{1(x+y)-y}{x+y} \\ &= \frac{2x+y-x-y}{(x+y)} \times \frac{(x+y)}{x+y-y} \\ &= \frac{x}{1} \times \frac{1}{x} \\ &= 1 \end{aligned}$$

নির্ণেয় সরলফল 1

$$(ছ) \left(\frac{a}{a+b} - \frac{b}{a-b} \right) \div \left(\frac{a}{a-b} - \frac{b}{a+b} \right)$$

সমাধান :

$$\begin{aligned} & \left(\frac{a}{a+b} - \frac{b}{a-b} \right) \div \left(\frac{a}{a-b} - \frac{b}{a+b} \right) \\ &= \frac{a(a-b)+b(a+b)}{(a-b)(a+b)} \div \frac{a(a+b)-b(a-b)}{(a-b)(a+b)} \\ &= \frac{a^2-ab+ab+b^2}{(a-b)(a+b)} \times \frac{(a-b)(a+b)}{a^2+ab-ab+b^2} \\ &= \frac{(a^2+b^2)}{(a-b)(a+b)} \times \frac{(a-b)(a+b)}{(a^2+b^2)} \\ &= \frac{(a^2+b^2)}{(a^2+b^2)} \\ &= 1 \end{aligned}$$

নির্ণেয় সরলফল 1

$$(জ) \left(\frac{a^2 + b^2}{2ab} - 1 \right) \div \left(\frac{a^3 - b^3}{a - b} - 3ab \right)$$

সমাধান :

$$\begin{aligned} & \left(\frac{a^2 + b^2}{2ab} - 1 \right) \div \left(\frac{a^3 - b^3}{a - b} - 3ab \right) \\ &= \left(\frac{a^2 + b^2 - 2ab}{2ab} \right) \div \left(\frac{a^3 - b^3 - 3ab(a - b)}{a - b} \right) \\ &= \frac{(a - b)^2}{2ab} \times \frac{(a - b)}{(a - b)^3} \\ &= \frac{1}{2ab} \end{aligned}$$

নির্ণেয় সরলফল $\frac{1}{2ab}$

$$(ঝ) \frac{(x + y)^2 - 4xy}{(a + b)^2 - 4ab} \div \frac{x^3 - y^3 - 3xy(x - y)}{a^3 - b^3 - 3ab(a - b)}$$

সমাধান :

$$\begin{aligned} & \frac{(x + y)^2 - 4xy}{(a + b)^2 - 4ab} \div \frac{x^3 - y^3 - 3xy(x - y)}{a^3 - b^3 - 3ab(a - b)} \\ &= \frac{(x - y)^2}{(a - b)^2} \div \frac{(x - y)^3}{(a - b)^3} \quad [\because (a - b)^2 = (a + b)^2 - 4ab \text{ সূত্র মতে }] \\ &= \frac{(x - y)^2}{(a - b)^2} \times \frac{(a - b)^3}{(x - y)^3} \\ &= \frac{a - b}{x - y} \end{aligned}$$

নির্ণেয় সরলফল $\frac{a - b}{x - y}$

$$(এ৩) \left(\frac{a}{b} + \frac{b}{a} + 1 \right) \div \left(\frac{a^2}{b^2} + \frac{a}{b} + 1 \right)$$

সমাধান :

$$\begin{aligned} & \left(\frac{a}{b} + \frac{b}{a} + 1 \right) \div \left(\frac{a^2}{b^2} + \frac{a}{b} + 1 \right) \\ &= \left(\frac{a^2 + b^2 + ab}{ab} \right) \div \left(\frac{a^2 + ab + b^2}{b^2} \right) \\ &= \frac{(a^2 + b^2 + ab)}{ab} \times \frac{b^2}{(a^2 + ab + b^2)} \\ &= \frac{b}{a} \end{aligned}$$

নির্ণেয় সরলফল $\frac{b}{a}$

৯। সরল কর।

$$(ক) \frac{x^2 + 2x - 15}{x^2 + x - 12} \div \frac{x^2 - 25}{x^2 - x - 20} \times \frac{x - 2}{x^2 - 5x + 6}$$

$$(খ) \left(\frac{x}{x-y} - \frac{x}{x+y} \right) \div \left(\frac{y}{x-y} - \frac{y}{x+y} \right) + \left(\frac{x+y}{x-y} + \frac{x-y}{x+y} \right) \div \left(\frac{x+y}{x-y} - \frac{x-y}{x+y} \right)$$

$$(গ) \frac{x^2 + 2x - 3}{x^2 + x - 2} \div \frac{x^2 + x - 6}{x^2 - 4}$$

$$(ঘ) \frac{a^4 - b^4}{a^2 + b^2 - 2ab} \times \frac{(a+b)^2 - 4ab}{a^3 - b^3} \div \frac{a+b}{a^2 + ab + b^2}$$

$$(ক) \frac{x^2 + 2x - 15}{x^2 + x - 12} \div \frac{x^2 - 25}{x^2 - x - 20} \times \frac{x - 2}{x^2 - 5x + 6}$$

সমাধান :

$$\frac{x^2 + 2x - 15}{x^2 + x - 12} \div \frac{x^2 - 25}{x^2 - x - 20} \times \frac{x - 2}{x^2 - 5x + 6}$$

$$\begin{aligned}
&= \frac{x^2 + 5x - 3x - 15}{x^2 + 4x - 3x - 12} \div \frac{x^2 - 5^2}{x^2 - 5x + 4x - 20} \times \frac{x - 2}{x^2 - 3x - 2x + 6} \\
&= \frac{(x+5)(x-3)}{(x+4)(x-3)} \times \frac{(x-5)(x+4)}{(x-5)(x+5)} \times \frac{(x-2)}{(x-3)(x-2)} \\
&= \frac{(x+5)(x-3)}{(x+4)(x-3)} \times \frac{(x-5)(x+4)}{(x-5)(x+5)} \times \frac{(x-2)}{(x-3)(x-2)} \\
&= \frac{1}{(x-3)}
\end{aligned}$$

নির্ণেয় সরলফল $\frac{1}{(x-3)}$

$$(খ) \left(\frac{x}{x-y} - \frac{x}{x+y} \right) \div \left(\frac{y}{x-y} - \frac{y}{x+y} \right) + \left(\frac{x+y}{x-y} + \frac{x-y}{x+y} \right) \div \left(\frac{x+y}{x-y} - \frac{x-y}{x+y} \right)$$

সমাধান :

$$\begin{aligned}
&\left(\frac{x}{x-y} - \frac{x}{x+y} \right) \div \left(\frac{y}{x-y} - \frac{y}{x+y} \right) + \left(\frac{x+y}{x-y} + \frac{x-y}{x+y} \right) \div \left(\frac{x+y}{x-y} - \frac{x-y}{x+y} \right) \\
&= \frac{x(x+y) - x(x-y)}{(x-y)(x+y)} \div \frac{y(x+y) - y(x-y)}{(x-y)(x+y)} + \frac{(x+y)(x+y) + (x-y)(x-y)}{(x-y)(x+y)} \div \frac{(x+y)(x+y) + (x-y)(x-y)}{(x-y)(x-y)} \\
&= \frac{x^2 + xy - x^2 + xy}{(x-y)(x+y)} \div \frac{xy + y^2 - xy + y^2}{(x-y)(x+y)} + \frac{2x^2 + 2y^2}{(x-y)(x+y)} \div \frac{4xy}{(x-y)(x-y)} \\
&= \frac{2xy}{(x-y)(x+y)} \times \frac{(x-y)(x+y)}{2y^2} + \frac{2(x^2 + y^2)}{(x-y)(x+y)} \times \frac{(x-y)(x-y)}{4xy} \\
&= \frac{x}{y} + \frac{x^2 + y^2}{2xy} \\
&= \frac{2x^2 + x^2 + y^2}{2xy} \\
&= \frac{3x^2 + y^2}{2xy}
\end{aligned}$$

নির্ণেয় সরলফল $\frac{3x^2 + y^2}{2xy}$

(গ) $\frac{x^2 + 2x - 3}{x^2 + x - 2} \div \frac{x^2 + x - 6}{x^2 - 4}$

সমাধান :

$$\begin{aligned} & \frac{x^2 + 2x - 3}{x^2 + x - 2} \div \frac{x^2 + x - 6}{x^2 - 4} \\ &= \frac{x^2 + 3x - x - 3}{x^2 + 2x - x - 2} \div \frac{x^2 + 3x - 2x - 6}{x^2 - 2^2} \\ &= \frac{(x+3)(x-1)}{(x+2)(x-1)} \times \frac{(x-2)(x+2)}{(x+3)(x-2)} \\ &= \frac{(x+3)(x-1)}{(x+2)(x-1)} \times \frac{(x-2)(x+2)}{(x+3)(x-2)} \\ &= 1 \end{aligned}$$

নির্ণেয় সরলফল = 1

(ঘ) $\frac{a^4 - b^4}{a^2 + b^2 - 2ab} \times \frac{(a+b)^2 - 4ab}{a^3 - b^3} \div \frac{a+b}{a^2 + ab + b^2}$

সমাধান :

$$\begin{aligned} & \frac{a^4 - b^4}{a^2 + b^2 - 2ab} \times \frac{(a+b)^2 - 4ab}{a^3 - b^3} \div \frac{a+b}{a^2 + ab + b^2} \\ &= \frac{(a-b)(a+b)(a^2 + b^2)}{(a-b)^2} \times \frac{(a-b)^2}{(a-b)(a^2 + ab + b^2)} \times \frac{(a^2 + ab + b^2)}{(a+b)} \\ &= a^2 + b^2 \end{aligned}$$

নির্ণেয় সরলফল $a^2 + b^2$