

FACTORIZATION (B), ALGEBRAIC FRACTION AND FORMULA

Form 2 Regular Course

Vol 3

Part 3 - Algebraic Fraction

2. (b) $-\frac{x^3}{3x^2}$

$$-\frac{x}{3}$$

(d) $\frac{256a^3b^4}{144a^5b^2}$

$$= \frac{16b^2}{9a^2}$$

(f) $\frac{20(x-5y)}{28(x-5y)^3}$

$$= \frac{5}{7(x-5y)^2}$$

(h) $\frac{16a^2 - 49}{4a + 7}$

$$= \frac{(4a-7)(4a+7)}{4a+7}$$

$$= 4a - 7$$

(j) $\frac{6a^2 - 9a^2b}{6ba^3 - 4a^3}$

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

$$= -\frac{3}{2a}$$

(l) $\frac{6x^3 - 9x^2y}{63y - 42x}$

$$= \frac{3x^2(2x-3y)}{21(3y-2x)}$$

$$= -\frac{x^2}{7}$$

$$\begin{aligned}
 \text{(n)} \quad & \frac{6x^3 - 15x^2y}{35y - 14x} \\
 &= \frac{3x^2(2x - 5y)}{7(5y - 2x)} \\
 &= -\frac{3x^2}{7}
 \end{aligned}$$

$$\begin{aligned}
 \text{(p)} \quad & \frac{18m^2 - 2n^2}{3m + n} \\
 &= \frac{2(3m - n)(3m + n)}{3m + n} \\
 &= 6m - 2n
 \end{aligned}$$

$$\begin{aligned}
 3. \text{ (a)} \quad & \frac{9x^2y}{5} \div \frac{27xy}{10} \\
 &= \frac{9x^2y}{5} \times \frac{10}{27xy} \\
 &= \frac{2x}{3}
 \end{aligned}$$

$$\begin{aligned}
 \text{(c)} \quad & \frac{2x^3}{7y^2} \times \frac{6x^2y}{4xy} \div \frac{10x}{y^3} \\
 &= \frac{2x^3}{7y^2} \times \frac{6x^2y}{4xy} \times \frac{y^3}{10x} \\
 &= \frac{3x^3y}{70}
 \end{aligned}$$

$$\begin{aligned}
 \text{(e)} \quad & \frac{abc + ac}{a^2b(x - y)^2} \div \frac{b(b + 1)^2}{b^2(y - x)} \\
 &= \frac{ac(b + 1)}{a^2b(x - y)^2} \times \frac{b^2(y - x)}{b(b + 1)^2} \\
 &= \frac{c}{a(y - x)(b + 1)}
 \end{aligned}$$

$$\begin{aligned}
 \text{(g)} \quad & \frac{c+2}{ab^2} \times \frac{10a+2b}{9ac+18a} \div \frac{5a+b}{-7a^2b} \\
 &= \frac{c+2}{ab^2} \times \frac{2(5a+b)}{9a(c+2)} \times \frac{-7a^2b}{5a+b} \\
 &= -\frac{14}{9b}
 \end{aligned}$$

$$\begin{aligned}
 \text{(i)} \quad & \frac{ab+b^2}{2a^2-ab} \times \frac{10a-5b}{3ab^2+b^2} \div (a+b) \\
 &= \frac{b(a+b)}{a(2a-b)} \times \frac{5(2a-b)}{b^2(3a+1)} \times \frac{1}{a+b} \\
 &= \frac{5}{ab(3a+1)}
 \end{aligned}$$

$$\begin{aligned}
 4. \text{ (c)} \quad & \frac{1}{x(x-2)} + \frac{1}{(x-2)(x-4)} \\
 &= \frac{x-4}{x(x-2)(x-4)} + \frac{x}{x(x-2)(x-4)} \\
 &= \frac{2x-4}{x(x-2)(x-4)} \\
 &= \frac{2(x-2)}{x(x-2)(x-4)} \\
 &= \frac{2}{x(x-4)}
 \end{aligned}$$

$$\begin{aligned}
 \text{(d)} \quad & \frac{3}{(x+4)(x-2)} - \frac{3}{(4+x)(1-x)} \\
 &= \frac{3(x-1)}{(x+4)(x-2)(x-1)} + \frac{3(x-2)}{(x+4)(x-1)(x-2)} \\
 &= \frac{3(x-1+x-2)}{(x+4)(x-2)(x-1)} \\
 &= \frac{3(2x-3)}{(x+4)(x-2)(x-1)}
 \end{aligned}$$

$$\begin{aligned}
 \text{(e)} \quad & \frac{9d}{(c+d)^2} - \frac{11}{d+c} \\
 &= \frac{9d}{(c+d)^2} - \frac{11(c+d)}{(c+d)^2} \\
 &= \frac{9d-11c-11d}{(c+d)^2} \\
 &= -\frac{11c+2d}{(c+d)^2}
 \end{aligned}$$

$$\begin{aligned}
 \text{(f)} \quad & \frac{2p}{3(5p-12)} - \frac{q}{7(12-5p)} \\
 &= \frac{14p}{21(5p-12)} + \frac{3q}{21(5p-12)} \\
 &= \frac{14p+3q}{21(5p-12)}
 \end{aligned}$$

$$\begin{aligned}
 \text{(w)} \quad & \frac{2a-b}{3ax+bx-3ay-by} + \frac{3-x}{4x^2-4xy} \\
 &= \frac{2a-b}{x(3a+b)-y(3a+b)} + \frac{3-x}{4x(x-y)} \\
 &= \frac{2a-b}{(3a+b)(x-y)} + \frac{3-x}{4x(x-y)} \\
 &= \frac{4x(2a-b)}{4x(3a+b)(x-y)} + \frac{(3-x)(3a+b)}{4x(3a+b)(x-y)} \\
 &= \frac{8ax-4bx+9a+3b-3ax-bx}{4x(3a+b)(x-y)} \\
 &= \frac{5ax-5bx+9a+3b}{4x(3a+b)(x-y)}
 \end{aligned}$$

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

$$\begin{aligned}
 \text{(y)} \quad & \frac{2}{x^2-4x+4} - \frac{2}{x^2-4} \\
 &= \frac{2}{(x-2)^2} - \frac{2}{(x-2)(x+2)} \\
 &= \frac{2(x+2)}{(x-2)^2(x+2)} - \frac{2(x-2)}{(x-2)^2(x+2)} \\
 &= \frac{2x+4-2x+4}{(x-2)^2(x+2)} \\
 &= \frac{8}{(x-2)^2(x+2)}
 \end{aligned}$$

$$\begin{aligned}
 \text{(z)} \quad & \frac{1}{x+3} - \frac{x}{x^2+6x+9} \\
 &= \frac{x+3}{(x+3)^2} - \frac{x}{(x+3)^2} \\
 &= \frac{x+3-x}{(x+3)^2} \\
 &= \frac{3}{(x+3)^2}
 \end{aligned}$$