ALGEBRAIC FRACTIONS

Simplify:

1 $\frac{8a-4b}{4}$ 2 $\frac{15x+10y}{15}$ 3 $\frac{14x-7y}{2x-y}$ 4 $\frac{8x^2-4xy}{8xy}$

① $\frac{8a-4b}{4} = 2a-b$

② $\frac{15x+10y}{15} = x + \frac{2}{3}y$

③ $\frac{14x-7y}{2x-y} = \frac{7(2x-y)}{(2x-y)} = 7$

④ $\frac{8x^2-4xy}{8xy} = \frac{2x-y}{2y} = \frac{x}{y} - \frac{1}{2}$

9 $\frac{mn-n^2}{n}$ 10 $\frac{p^2q-pq^2}{pq}$ 11 $\frac{x^2+xy}{2x}$ 12 $\frac{2rs-12r}{r^2+rs}$

⑨ $\frac{mn-n^2}{n} = m-n$

⑩ $\frac{p^2q-pq^2}{pq} = p-q$

⑪ $\frac{x^2+xy}{2x} = \frac{x}{2} + \frac{y}{2}$

⑫ $\frac{2rs-12r}{r^2+rs} = \frac{2s-12}{r+s} = \frac{2(s-6)}{r+s}$

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17 $\frac{4x^2-4xy}{x^2-y^2}$ 18 $\frac{x^2-7x+6}{x^2-36}$ 19 $\frac{a^2+ab}{ab+b^2}$ 20 $\frac{a^2-b^2}{a^2+ab}$

(17) $\frac{4x^2-4xy}{x^2-y^2} = \frac{4x(x-y)}{(x-y)(x+y)} = \frac{4x}{x+y}$

(18) $\frac{x^2-7x+6}{x^2-36} = \frac{(x-1)(x-6)}{(x-6)(x+6)} = \frac{x-1}{x+6}$

(19) $\frac{a^2+ab}{ab+b^2} = \frac{a(a+b)}{b(a+b)} = \frac{a}{b}$

(20) $\frac{a^2-b^2}{a^2+ab} = \frac{(a-b)(a+b)}{a(a+b)} = \frac{a-b}{a}$

21 $\frac{x^2-1}{x^2-5x+4}$ 22 $\frac{x^2-6x+8}{x^2-x-2}$ 23 $\frac{x^2+3x+2}{x^2-4}$ 24 $\frac{x^2-5x+6}{x^2+x-12}$

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

(22) $\frac{x^2-6x+8}{x^2-x-2} = \frac{(x-2)(x-4)}{(x-2)(x+1)} = \frac{x-4}{x+1}$

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

(24) $\frac{x^2-5x+6}{x^2+x-12} = \frac{(x-3)(x-2)}{(x-3)(x+4)} = \frac{x-2}{x+4}$

ALGEBRAIC FRACTIONS

25 $\frac{x^2+4x+4}{x^2-3x-10}$ **26** $\frac{4x^3y-16xy}{x^2+2x-8}$ **27** $\frac{12a+9}{15}\times\frac{5}{4a+3}$ **28** $\frac{3x^2-xy}{xy}\times\frac{x^2y}{3xy-y^2}$

(25) $\frac{x^2+4x+4}{x^2-3x-10} = \frac{(x+2)(x+2)}{(x+2)(x-5)} = \frac{x+2}{x-5}$

(26) $\frac{4x^3y-16xy}{x^2+2x-8} = \frac{4xy(x^2-4)}{x^2+2x-8} = \frac{4xy(x-2)(x+2)}{(x-2)(x+4)} = \frac{4xy(x+2)}{x+4}$

(27) $\frac{12a+9}{15} \times \frac{5}{4a+3} = \frac{3(4a+3)}{3} \times \frac{1}{(4a+3)} = 1$

(28) $\frac{3x^2-xy}{xy} \times \frac{x^2y}{3xy-y^2} = \frac{3x-y}{y} \times \frac{x^2}{3x-y}$

$= \frac{x^2}{y}$

36 $\dfrac{x^3+y^3}{x^2-y^2}$ **37** $\dfrac{8x^2+4x+2}{8x^3-1}$ **38** $\dfrac{2x+2y}{x^3-y^3}\times\dfrac{x^2-2xy+y^2}{x^2-y^2}$

(36) $\dfrac{x^3+y^3}{x^2-y^2} = \dfrac{(x+y)(x^2-xy+y^2)}{(x-y)(x+y)} = \dfrac{x^2-xy+y^2}{x-y}$

(37) $\dfrac{8x^2+4x+2}{8x^3-1} = \dfrac{2(4x^2+2x+1)}{(2x)^3-1^3}$

$= \dfrac{2(4x^2+2x+1)}{(2x-1)(4x^2+2x+1)} = \dfrac{2}{2x-1}$

(38) $\dfrac{2x+2y}{x^3-y^3}\times\dfrac{x^2-2xy+y^2}{x^2-y^2} = (A)$

$(A) = \dfrac{2(x+y)}{(x-y)(x^2+xy+y^2)}\times\dfrac{(x-y)^2}{(x-y)(x+y)}$

$(A) = \dfrac{2}{x^2+xy+y^2}$