Complex fraction

1. $\dfrac{\frac{6a^3}{5b}}{\frac{21a}{10b^2}} = \dfrac{\cancel{6}^{2}a^{2}}{\cancel{5b}} \times \dfrac{10^{2}b^{\cancel{2}}}{\cancel{21}_{7}a_{\cancel{1}}} = 2a^2 \cdot \dfrac{2b}{7} = \dfrac{4a^2b}{7}$

2. $\dfrac{\frac{18x^2}{x-1}}{\frac{x}{2x-2}} = \dfrac{18x^2}{x-1} \cdot \dfrac{2x-2}{x} = \dfrac{18x^2 \cdot 2(x-1)}{(x-1)x} = 36x$

3. $\dfrac{\frac{4c^2-1}{3c}}{\frac{2c+1}{9c^2}} = \dfrac{(4c^2-1)}{3c} \cdot \dfrac{9c^2}{(2c-1)} = \dfrac{(2c-1)(2c+1)(3c \cdot c)}{(3c)\cdot(3c-1)}$

$= (2c+1)(c)$

4. $\dfrac{\frac{n^2-9n+14}{4n+28}}{\frac{n-7}{n+7}} = \dfrac{(n-2)(n-7)}{4n+28} \cdot \dfrac{(n+7)}{(n-7)}$

$= \dfrac{(n-2)(n-7)}{4(n+7)} \cdot \dfrac{(n+7)}{(n-7)} = \dfrac{(n-2)}{4}$

5. $\dfrac{\frac{8x^2+24x}{x^2+9}}{\frac{2x}{15-5x}} = \dfrac{8x(x+3)}{x^2+9} \cdot \dfrac{15-5x}{2x}$

$= \dfrac{\cancel{8}^{4}x(x+3)}{(x^2+9)} \cdot \dfrac{5(3-x)}{\cancel{2x}} = 20\dfrac{(x+3)(3-x)}{x^2+9}$

$= 20\dfrac{(x+3)(3-x)}{(x-3)x+3)}$

$= -20\dfrac{((x+3)(x-3))}{(x-3)(x+3)} = -20$

6. $\dfrac{\dfrac{2y^2+16y}{2y^2-5y-7}}{\dfrac{4y^2+28y-32}{10y^2-10}} = \dfrac{2y(y+8)}{(y+1)(2y-7)} \cdot \dfrac{10(y+1)(y-1)}{4(y-1)(y+8)}$

$= \dfrac{2y(10)}{(2y-7)(4)} = \dfrac{2 \cdot 5\,(2y)}{2y-7}$

7. $\dfrac{\dfrac{x^2}{4}}{\dfrac{x^2}{4}-\dfrac{4}{x}} = \dfrac{x^2}{4} \cdot \dfrac{4x}{x^3-16} = \dfrac{x^3}{(x^3-16)}$

Denominator:

$\dfrac{x^2}{4}-\dfrac{4}{x}$

$\dfrac{x^3-16}{4x} = \dfrac{x^3-16}{4x}$

8. $\dfrac{1-\dfrac{a}{a-b}}{\dfrac{1}{a-b}} = \left[1-\dfrac{a}{a-b}\right] \cdot (a-b)$

$= (a-b)-a = -b$