1. $\dfrac{x^2 y - y^3}{x^2 - 2xy + y^2} : \dfrac{x^2 + 2xy + y^2}{x^3 - xy^2} =$

$= \dfrac{y(x^2 - y^2)}{(x-y)^2} : \dfrac{(x+y)^2}{x(x^2 - y^2)} = \dfrac{y(x-y)(x+y)}{(x-y)^2} \cdot \dfrac{x(x-y)(x+y)}{(x+y)^2} = xy$

c.a.: $x \neq 0;\ x - y \neq 0;\ x + y \neq 0$

2. $\left(\dfrac{1}{2a-1} - \dfrac{1}{2a+1}\right) : \left(\dfrac{b}{2a-1} + \dfrac{b}{2a+1}\right) =$

$= \dfrac{2a+1-(2a-1)}{(2a-1)(2a+1)} : \dfrac{b(2a+1)+b(2a-1)}{(2a-1)(2a+1)} =$

$= \dfrac{2a+1-2a+1}{(2a-1)(2a+1)} : \dfrac{2ab+b+2ab-b}{(2a-1)(2a+1)} =$

$= \dfrac{2}{(2a-1)(2a+1)} \cdot \dfrac{(2a-1)(2a+1)}{4ab} = \dfrac{1}{2ab}$

c.a.: $a \neq 0;\ b \neq 0;\ 2a+1 \neq 0;\ 2a-1 \neq 0$

3. $\dfrac{x^2-1}{x} - \dfrac{x^2}{x+1} + \dfrac{1}{x^2+x} - \dfrac{x-1}{x+1} =$

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

$= \dfrac{(x^2-1)(x+1) - x^3 + 1 - x(x-1)}{x(x+1)} = \dfrac{x^3 + x^2 - x - 1 - x^3 + 1 - x^2 + x}{x(x+1)} = 0$

c.a.: $x \neq 0;\ x + 1 \neq 0$

4. $\left(2 + \dfrac{x^2+y^2}{xy}\right)^2 \cdot \left[\dfrac{x-y}{x+y} + \dfrac{y^2}{(x+y)^2}\right]^2 : \dfrac{x^2}{y^2} =$

$= \left(\dfrac{2xy + x^2 + y^2}{xy}\right)^2 \cdot \left[\dfrac{x^2 - y^2 + y^2}{(x+y)^2}\right]^2 \cdot \dfrac{y^2}{x^2} =$

$= \left(\dfrac{(x+y)^2}{xy}\right)^2 \cdot \left[\dfrac{x^2}{(x+y)^2}\right]^2 \cdot \dfrac{y^2}{x^2} = \dfrac{(x+y)^4}{x^2 y^2} \cdot \dfrac{x^4}{(x+y)^4} \cdot \dfrac{y^2}{x^2} = 1$

c.a.: $x \neq 0;\ y \neq 0;\ x + y \neq 0$

5. $$1+y\cdot\left[\frac{5}{6y}+\frac{x}{3y^2-2x^2}\cdot\left(\frac{2x+y}{2x}-\frac{x+3y}{3y}\right)\right]=$$

$$=1+y\cdot\left(\frac{5}{6y}+\frac{x}{3y^2-2x^2}\cdot\frac{3y(2x+y)-2x(x+3y)}{6xy}\right)=$$

$$=1+y\cdot\left(\frac{5}{6y}+\frac{x}{3y^2-2x^2}\cdot\frac{6xy+3y^2-2x^2-6xy}{6xy}\right)=$$

$$=1+y\cdot\left(\frac{5}{6y}+\frac{x}{3y^2-2x^2}\cdot\frac{3y^2-2x^2}{6xy}\right)=1+y\cdot\left(\frac{5}{6y}+\frac{1}{6y}\right)=1+y\cdot\frac{6}{6y}=2$$

c.a.: $x\neq 0;\ y\neq 0;\ 3y^2-2x^2\neq 0$

6. $$\frac{1+\frac{1}{xy}}{x-y}\cdot\left(x+\frac{1-\frac{x}{y}}{\frac{1}{y}+x}\right):\frac{\frac{1}{x^2}+1}{1-\frac{y}{x}}=$$

$$=\frac{\frac{xy+1}{xy}}{x-y}\cdot\left(x+\frac{\frac{y-x}{y}}{\frac{1+xy}{y}}\right):\frac{\frac{1+x^2}{x^2}}{\frac{x-y}{x}}=$$

$$=\frac{xy+1}{xy}\cdot\frac{1}{x-y}\cdot\left(x+\frac{y-x}{y}\cdot\frac{y}{1+xy}\right):\left(\frac{1+x^2}{x^2}\cdot\frac{x}{x-y}\right)=$$

$$=\frac{xy+1}{xy(x-y)}\cdot\left(x+\frac{y-x}{1+xy}\right):\frac{1+x^2}{x(x-y)}=$$

$$=\frac{xy+1}{xy(x-y)}\cdot\frac{x+x^2y+y-x}{1+xy}\cdot\frac{x(x-y)}{1+x^2}=.$$

$$=\frac{xy+1}{xy(x-y)}\cdot\frac{y(x^2+1)}{1+xy}\cdot\frac{x(x-y)}{1+x^2}=1$$

c.a.: $x\neq 0;\ y\neq 0;\ 1+xy\neq 0;\ x-y\neq 0$