5) $\frac{x+3}{x}-5=\frac{x}{x-2}$ domain $G=\mathbb{R}\setminus\{0;2\}$

Multiply by the least common multiple $x\cdot(x-2)$ of the denominators:

$$\frac{x+3}{x}-5=\frac{x}{x-2} \quad |\cdot x\cdot(x-2)$$

$$\frac{(x+3)\cdot \cancel{x}\cdot(x-2)}{\cancel{x}}-5\cdot x\cdot(x-2)=\frac{x\cdot x\cdot \cancel{(x-2)}}{\cancel{x-2}}$$

$$(x+3)(x-2)-5x(x-2)=x^2$$

$$x^2+x-6-5x^2+10x=x^2 \quad |-x^2$$

$$-5x^2+11x-6=0$$

$$x_{1,2}=\frac{-b\pm\sqrt{b^2-4ac}}{2a}=\frac{-11\pm\sqrt{121-120}}{-10}=\frac{-11\pm1}{-10}$$

$x_1=1 \quad x_2=1.2$

Both values are elements of the domain: $L=\{1;1.2\}$

6) $\frac{w}{2w-3}-\frac{1}{2w}=\frac{3}{4w-6}$

The denominator on the right-hand side can be factorized to $2\cdot(2w-3)$.
Hence the least common multiple of the denominators equals $2\cdot w\cdot(2w-3)$.

Domain: $G=\mathbb{R}\setminus\{0;1.5\}$

$$\frac{w}{2w-3}-\frac{1}{2w}=\frac{3}{4w-6} \quad |\cdot 2\cdot w\cdot(2w-3)$$

$$\frac{w\cdot 2\cdot w\cdot \cancel{(2w-3)}}{\cancel{(2w-3)}}-\frac{1\cdot \cancel{2}\cdot \cancel{w}\cdot(2w-3)}{\cancel{2}\,\cancel{w}}=\frac{3\cdot \cancel{2}\cdot w\cdot \cancel{(2w-3)}}{\cancel{2}\cdot \cancel{(2w-3)}}$$

$$2w^2-(2w-3)=3w$$

$$2w^2-2w+3=3w \quad |-3w$$

$$2w^2-5w+3=0$$

$$w_{1,2}=\frac{-b\pm\sqrt{b^2-4ac}}{2a}=\frac{5\pm\sqrt{25-24}}{4}=\frac{5\pm1}{4}$$

$w_1=1.5 \quad w_2=1$

$w_1=1.5$ is **not** an acceptable solution, because it is not an element of G.

Therefore there's only one solution, $w_2=1$.

$L=\{1\}$