1)

$$\frac{\frac{a^2+b^2}{b}-a}{\frac{1}{b}-\frac{1}{a}}\cdot\frac{a^2-b^2}{a^3+b^3}=\frac{a^2+b^2-ab}{b}\cdot\frac{ba}{a-b}\cdot\frac{a^2-b^2}{a^3+b^3}=$$

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

2)

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

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

3)

$$\left(m+\frac{2m}{m-1}-\frac{3m}{m+1}-\frac{m^2}{m^2-1}\right)\cdot\left(m-\frac{1}{m}\right)=$$

$$=\left(\frac{m(m^2-1)+2m(m+1)-3m(m-1)-m^2}{m^2-1}\right)\cdot\left(\frac{m^2-1}{m}\right)=$$

$$=m^2-1+2m+2-3m+3-m=m^2-2m+4$$

4)

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

5)

$$\frac{(a-b)^2+ab}{(a+b)^2-ab}:\frac{a^5+b^5+a^2b^3+a^3b^2}{(a^3+b^3+a^2b+ab^2)(a^3-b^3)}=$$

$$=\frac{a^2-ab+b^2}{a^2+ab+b^2}:\frac{a^3(a^2+b^2)+b^3(b^2+a^2)}{\left(a^2(a+b)+b^2(a+b)\right)(a^3-b^3)}=$$

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

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

6)

$(9-4x^2)(x^2-6x+9)=0$
$(9-4x^2)=0 \vee (x^2-6x+9)=0$
$(3-2x)(3+2x)=0 \vee (x-3)^2=0$
$x \in \left\{\pm\frac{3}{2};3\right\}$

7)

$(2-x)(x^2-9) \geq 0$
$\big((2-x) \geq 0 \wedge (x^2-9) \geq 0\big) \vee \big((2-x) \leq 0 \wedge (x^2-9) \leq 0\big)$
$\big((2-x) \geq 0 \wedge x^2 \geq 9\big) \vee \big((2-x) \leq 0 \wedge x^2 \leq 9\big)$
$\big(x \leq 2 \wedge (x \geq 3 \vee x \leq -3)\big) \vee \big(x \geq 2 \wedge (x \leq 3 \vee x \geq -3)\big)$
$(x \in (-\infty;2\rangle \cap \big((-\infty;-3) \cup (3;\infty)\big) \vee x \in \langle 2;\infty) \cap \langle -3;3\rangle$
$x \in (-\infty;-3\rangle \cup \langle 2;3\rangle$