1) $(x-5)(x+3)(x-2)=0 \qquad \mathbb{L} = \{-3; 2; 5\}$

$(x+3)(x-3)(x+1)(x-7)=0 \qquad \mathbb{L} = \{-3; -1; 3; 7\}$

2) $$\frac{\frac{2}{9}+\frac{4}{15}}{\frac{4}{3}-\frac{7}{10}} = \frac{\frac{10+12}{45}}{\frac{40-21}{30}} = \frac{\frac{22}{45}}{\frac{19}{30}} = \frac{22}{\underset{3}{\cancel{45}}} \cdot \frac{\overset{2}{\cancel{30}}}{19} = \frac{44}{57}$$

$$\frac{\frac{3x}{4y}-\frac{5}{3z}}{\frac{5x}{6yz}+\frac{3z}{2x}} = \frac{\frac{9xz-20y}{12yz}}{\frac{5x^2+9yz^2}{6xyz}} = \frac{9xz-20y}{\underset{2}{\cancel{12}}yz} \cdot \frac{\cancel{6}xyz}{5x^2+9yz^2}$$

$$= \frac{9x^2z-20xy}{10x^2+18yz^2}$$

4) a) $$\frac{3}{1} - \frac{2x+3y}{x+y} - \frac{x^2-y^2}{(x+y)^2} \longrightarrow (x-y)(x+y)$$

$$(x+y)(x+y)$$

$$\frac{3(x+y)(x+y) - (2x+3y)\cdot(x+y) - (x^2-y^2)}{(x+y)(x+y)}$$

$$3(x^2+2xy+y^2) - (2x^2+2xy+3xy+3y^2) - (x^2-y^2)$$

$$3x^2+6xy+3y^2-2x^2-5xy-3y^2-x^2+y^2$$

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

a) $\dfrac{2u(u-v)}{(u+v)(u-v)} - \dfrac{4}{3} + \dfrac{1}{u}$

$$\frac{6u^2 - 4u\cdot(u+v) + 3\cdot(u+v)}{3u(u+v)}$$

$$\frac{6u^2 - 4u^2 - 4uv + 3u + 3v}{3u^2 + 3uv} = \frac{2u^2 - 4uv + 3v + 3u}{3u^2 + 3uv}$$

b) $\dfrac{\dfrac{-0{,}5}{5} - \dfrac{1}{2xy}}{\dfrac{xy}{5} + \dfrac{2}{1} + \dfrac{5}{xy}} = \dfrac{\dfrac{-xy-5}{10xy}}{\dfrac{(xy)^2 + 10xy + 25}{5xy}}$

$$= \frac{-\cancel{(xy+5)}}{\cancel{10xy}_{2}} \cdot \frac{\cancel{5xy}}{(xy+5)^{\cancel{2}}} = \frac{-1}{2(xy+5)}$$

5)
$$\frac{\frac{a}{3}+2+\frac{3}{a}}{\frac{1}{6}+\frac{1}{2a}} = \frac{\frac{a^2+6a+9}{3a}}{\frac{a+3}{6a}} = \frac{(a+3)^{\cancel{2}}}{\cancel{3a}}\cdot\frac{\overset{2}{\cancel{6a}}}{\cancel{(a+3)}}$$

$$= 2a+6$$

3)
$$\frac{2}{5x}-\frac{3}{4}+\frac{5}{12}-\frac{7}{6}=\frac{4}{15x}-\frac{9}{10} \quad \Big| \cdot HN\ 60x$$

$$12\cdot 2 - 15x\cdot 3 + 5x\cdot 5 - 10x\cdot 7 = 4\cdot 4 - 6x\cdot 9$$

$$\overset{12}{\cancel{60x}}\cdot\frac{2}{\cancel{5x}}$$

$$24-45x+25x-70x=16-54x \quad \Big| -24+54x$$

$$-36x=-8$$

$$x=\frac{8}{36}=\frac{2}{9}=0{,}\overline{2}$$

1) $$\sqrt[3]{x^2} \cdot \sqrt{\sqrt[4]{x^3} \cdot x} \cdot \frac{1}{\sqrt[3]{x^5}}$$

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$$x^{2/3} \cdot \left(x^{3/4}\right)^{1/2} \cdot x^{1/2} \cdot x^{-5/3}$$

$$x^{\frac{2}{3}+\frac{3}{8}+\frac{1}{2}-\frac{5}{3}} = x^{\frac{-8+3+4}{8}} = x^{-1/8} = \frac{1}{\sqrt[8]{x}}$$

2) $$\sqrt[4]{\sqrt{x^3}} \cdot \frac{1}{\left(\sqrt{x^3}\right)^4} \cdot \sqrt[3]{\sqrt{x^5} \cdot \frac{1}{x^2}}$$

$$\left(\left(x^3\right)^{1/2}\right)^{1/4} \cdot \left(\left(\left(x^3\right)^{1/2}\right)^4\right)^{-1} \left(\left(x^5\right)^{1/2}\right)^{1/3} \left(x^{-2}\right)^{1/3}$$

$$x^{3/8} \cdot x^{-6} \cdot x^{5/6} \cdot x^{-2/3} = x^{\frac{9-144+20-16}{24}}$$

$$x^{\frac{-131}{24}} = \frac{1}{\sqrt[24]{x^{131}}}$$