1)
$$\frac{\frac{2}{7}-\frac{3}{5}}{\dfrac{-\frac{1}{3}-\frac{1}{6}}{2}} = \frac{\dfrac{10-21}{35}}{\dfrac{\frac{-2-1}{6}}{2}} = \frac{-\dfrac{11}{35}}{\dfrac{-\frac{1}{2}}{\frac{2}{1}}}$$

$$= \frac{\ominus\frac{11}{35}}{\ominus\frac{1}{2}\cdot\frac{1}{2}} = +\frac{11}{35}\cdot\frac{4}{1} = \frac{44}{35}$$

$-\frac{1}{4}$

$\dfrac{-\frac{11}{35}}{-\frac{1}{4}} = -\frac{11}{35}\cdot\left(-\frac{4}{1}\right)$

$= +\frac{44}{35}$

2)

$x = 0,\overline{324} \quad / \cdot 1000$

$1000x = 324,\overline{324} \quad / -x$

$999x = 324$

$x = \frac{324}{999}$

$x = \frac{12}{37} = 0,\overline{324}$

$0,\overline{324}$

$324,\overline{324}$
$= 324 + 0,\overline{324}$

3)

3) $\dfrac{\sqrt{x+y}}{\dfrac{\sqrt{x-y}}{x^2-y^2}} - x - y = \dfrac{\sqrt{x+y}}{\dfrac{\sqrt{x-y}}{(x+y)(x-y)}} - x - y =$

$(A^2 - B^2) = (A+B)\cdot(A-B)$

$x - y = \sqrt{(x-y)^2}$
$= \sqrt{(x-y)(x-y)}$
$= \sqrt{(x-y)}\,\sqrt{(x-y)}$

$= \dfrac{\sqrt{x+y}}{\dfrac{1}{(x+y)\sqrt{x-y}}} - x - y$

$= \dfrac{\sqrt{x+y}}{1} \cdot \dfrac{(x+y)\sqrt{x-y}}{1} - x - y$

$= (x+y)\sqrt{x^2-y^2} - x - y$

$x^2 - y^2 = 0$
$x - y = 0$
$x + y \geq 0$
$x - y > 0$

$(x+y)(x-y) = 0$

$x \neq y$
$x \neq -y$
$x > -y$
$x > y$

2) $\left[\left(\dfrac{x}{y}\right)^2 - \dfrac{x}{y^2}\right] : \left(\dfrac{x-1}{y}\right)^2 = \left[\dfrac{x^2}{y^2} - \dfrac{x}{y^2}\right] \cdot \dfrac{y^2 \cdot 1}{(x-1)^2}$

$= \left[x^2 - x\right] \cdot \dfrac{1}{(x-1)^2} = \dfrac{x^2 - x}{(x-1)^2}$

$= \dfrac{x \cdot (x-1)}{(x-1)^2} = \boxed{\dfrac{x}{x-1}} = \dfrac{x}{x\left(1 - \frac{1}{x}\right)}$

$\left\lfloor y \neq 0 \right\rfloor \quad x - 1 \neq 0 \quad \boxed{x \neq 1}$

J) $\sqrt{\left(\dfrac{c^{1/2} \cdot c^{-1/3}}{c^{5/6}}\right)^{-3}} = \left(\dfrac{c^{\frac{1}{2} - \frac{1}{3}}}{c^{-5/6}}\right)^{-\frac{3}{5}} = \left(\dfrac{c^{\frac{3}{6} - \frac{2}{6}}}{c^{-5/6}}\right)^{-1/5}$

$\left(a^r\right)^s = a^{r \cdot s} \qquad \sqrt[r]{a} = a^{\frac{1}{r}} \qquad a^r \cdot a^s = a^{r+s}$

$\dfrac{a^r}{a^s} = a^{r-s}$

$= \left(\dfrac{c^{1/6}}{c^{-5/6}}\right)^{-3/5} = \left(c^{\frac{1}{6} - \left(-\frac{5}{6}\right)}\right)^{-3/5} = \boxed{c^{-\frac{3}{5}}}$

$c \neq 0 \land c \geq 0 \Rightarrow \boxed{c > 0}$

$$4)\ \frac{\left(\sqrt[4]{u}+\sqrt[4]{v}\right)^2+\left(\sqrt[4]{u}-\sqrt[4]{v}\right)^2}{u-v}:\frac{2}{\sqrt{u}-\sqrt{v}}=$$

$$(A+B)^2=A^2+2AB+B^2$$
$$(A-B)^2=A^2-2AB+B^2\ \Bigg\}\ \oplus$$

$$\begin{array}{l}u\ne v\\u\ge 0\\v\ge 0\end{array}$$

$$A^2=\left(\sqrt[4]{u}\right)^2=\sqrt{u}$$

$$=\frac{2\sqrt{u}+2\sqrt{v}}{\underbrace{u-v}_{A^2-B^2}}\cdot\frac{\overbrace{\sqrt{u}-\sqrt{v}}^{A-B}}{2}=$$

$$(\sqrt{u}+\sqrt{v})$$

$$A^2-B^2=(A+B)\cdot(A-B)$$

$$u=\sqrt{u}^{\,2}$$

$$\frac{2(\sqrt{u}+\sqrt{v})}{\sqrt{u}+\sqrt{v}}\cdot\frac{1}{2}=1$$

$$\underset{a\quad b\quad\ \ c}{x^2-\sqrt{5}x-6=0}\qquad x_{1,2}=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$$

$$x_{1,2}=\frac{\sqrt{}\pm\sqrt{2\sqrt{7}24}}{2}=\frac{5\pm7}{2}=\begin{cases}6\\-1\end{cases}$$

$$p(x)=(x-6)\cdot(x+1)$$
$$=x^2-6x+x-6$$

$$-5x=-6+1x$$
$$-6=6\cdot(-1)$$

$$x^2 - 5x - 6 = \left(x - \frac{5}{2}\right)^2 - 6 - \frac{25}{4}$$

$$(A+B)^2 = A^2 + 2AB + B^2 \qquad \begin{array}{l} A = x \\ B = ? \end{array}$$

$$= x^2 - 5x + \frac{25}{4} - 6 - \frac{25}{4}$$

$$= \left(\underbrace{x - \frac{5}{2}}_{A}\right)^2 - \underbrace{\frac{49}{4}}_{B^2} \qquad B = \frac{7}{2}$$

$$A^2 - B^2$$

$$= \left(\underbrace{x - \frac{5}{2} + \frac{7}{2}}_{A \quad + \quad B}\right) \cdot \left(\underbrace{x - \frac{5}{2} - \frac{7}{2}}_{A \quad - \quad B}\right)$$

$$= (x + 1) \cdot (x - 6)$$

$$x^2 + x + 1 = \left(x + \frac{1}{2}\right)^2 - \left(-\frac{3}{4}\right)$$

$$\underbrace{A^2}_{} - \underbrace{B^2}_{} \quad \times$$

Trojčlenka

0,7 GB   5 minut

4,9 GB   ?

0,7 GB . . . . . 5 min

4,9 GB x

$$\frac{x}{5} = \frac{4,9}{0,7} \qquad / \cdot 5$$

$$x = 7 \cdot 5 = 35 \text{ min}$$

Bazén

0,1 l/s . . . . 36 h

6 l/s . . . x h

$$\frac{x}{36} = \frac{0,1}{6}$$

$$x = 0,6 \text{ h}$$

$$9) \quad \frac{x}{x^2+y^2} - \frac{y(x-y)^2}{x^4-y^4} = \frac{x(x^2-y^2) - y(x^2-2xy+y^2)}{x^4-y^4}$$

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

$$\begin{vmatrix} x^2+y^2 \neq 0 \\ x^2-y^2 \neq 0 \\ x^2 \neq +y^2 \\ \boxed{x \neq \pm y} \end{vmatrix}$$

$$= \frac{x^3 - xy^2 - yx^2 + 2 \cdot xy^2 - y^3}{x^4-y^4} =$$

$$= \frac{x^3 - x^2y + xy^2 - y^3}{x^4-y^4} = \frac{x^4-y^4}{(x^4-y^4) \cdot (x+y)}$$

$$= \frac{1}{x+y}$$