$$H(x)=\left[\left(\frac{3-2x}{2x}\right)^2\right]^3:\left(\frac{2x-3}{2x}\right)^5$$

P.c. $2x\neq 0 \Rightarrow x\neq 0$

$2x-3\neq 0 \Rightarrow 2x\neq 3 \Rightarrow x\neq \frac{3}{2}$

$x\in\mathbb{R}\setminus\left\{0;\frac{3}{2}\right\}=\mathbb{R}^*\setminus\left\{\frac{3}{2}\right\}$

$$H(x)=\left[\left(\frac{(-1)\cdot(2x-3)}{2x}\right)^2\right]^3:\left(\frac{2x-3}{2x}\right)^5=\left[\left(\frac{2x-3}{2x}\right)^2\right]^3:\left(\frac{2x-3}{2x}\right)^5$$

$$H(x)=\left(\frac{2x-3}{2x}\right)^6:\left(\frac{2x-3}{2x}\right)^5=\left(\frac{2x-3}{2x}\right)^1=\frac{2x-3}{2x}$$

$$E(x)=\frac{1}{3x}\cdot\frac{x^2-9}{x^2+7x+12}\cdot\frac{3x^2+12x}{x^2-6x+9}$$

P.c. $x\neq 0$

$x^2+7x+12\neq 0 \Leftrightarrow$

$x^2+3x+4x+12\neq 0 \Leftrightarrow$

$x(x+3)+4(x+3)\neq 0 \Leftrightarrow$

$(x+3)(x+4)\neq 0 \Leftrightarrow$

$x+3\neq 0$ și $x+4\neq 0$

$x\neq -3$ $\quad x\neq -4$

$x^2-6x+9\neq 0 \Leftrightarrow x^2-2\cdot 3x+3^2\neq 0 \Leftrightarrow$

$(x-3)^2\neq 0 \Leftrightarrow x-3\neq 0 \Leftrightarrow x\neq 3$

$$E(x)=\frac{1}{\cancel{3x}}\cdot\frac{\cancel{(x-3)}\cancel{(x+3)}}{\cancel{(x+3)}\cancel{(x+4)}}\cdot\frac{\cancel{3x}\cancel{(x+4)}}{(x-3)^{\cancel{2}}}=\frac{1}{x-3}$$

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

P.c. $x^2-x\neq 0 \Leftrightarrow x(x-1)\neq 0 \Leftrightarrow x\neq 0$ și $x-1\neq 0$, $x\neq 1$

$1-x^2\neq 0 \Leftrightarrow (1-x)(1+x)\neq 0 \Leftrightarrow 1-x\neq 0$ și $1+x\neq 0$; $1\neq x$, $x\neq -1$

$x^2+x\neq 0 \Leftrightarrow x(x+1)\neq 0 \Leftrightarrow x\neq 0$ și $x+1\neq 0$, $x\neq -1$

$x^2-x\neq 0 \Leftrightarrow x(x-1)\neq 0 \Leftrightarrow x\neq 0$ și $x-1\neq 0$, $x\neq 1$

$x\in\mathbb{R}\setminus\{1,0,-1\} \Rightarrow x\in\mathbb{R}^*\setminus\{1;-1\}$

$$-\frac{3}{1-x^2} = -\frac{3}{-1\cdot(-1+x^2)} = +\frac{3}{x^2-1}$$

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

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

$$F(x) = \frac{x+1+3x-2x+2}{\cancel{x}(\cancel{x-1})(x+1)}\cdot\frac{\cancel{x}(\cancel{x-1})}{1} = \frac{2x+3}{x+1}$$

$$A = \left\{x\in\mathbb{Z} \;\middle|\; \frac{2x+3}{x+1}\in\mathbb{Z}\right\}$$

$$\frac{2x+3}{x+1} = \frac{2\cdot x+1\cdot 2+1}{x+1} = \frac{2(x+1)+1}{x+1} = \frac{2\cancel{(x+1)}}{\cancel{x+1}} + \frac{1}{x+1} = 2+\frac{1}{x+1}\in\mathbb{Z} \Rightarrow$$

$$\frac{1}{x+1}\in\mathbb{Z} \Rightarrow (x+1)\mid 1 \Rightarrow x+1\in\{1;-1\} \Rightarrow \left.\begin{array}{l} x\in\{0;-2\} \\ x\neq 0\end{array}\right\} \Rightarrow A=\{-2\}$$

$x+1=1$ $\quad$ $x+1=-1$

$x=1-1$ $\quad$ $x=-1-1$

$x=0$ $\quad$ $x=-2$

<u>varianta 2</u>

$$\frac{2x+3}{x+1}\in\mathbb{Z} \Rightarrow \left.\begin{array}{l}(x+1)\mid(2x+3) \\ (x+1)\mid(x+1) \Rightarrow (x+1)\mid 2(x+1)\end{array}\right| \Rightarrow$$

$$\left.\begin{array}{l}(x+1)\mid(2x+3) \\ (x+1)\mid(2x+2)\end{array}\right\} \Rightarrow (x+1)\mid[(2x+3)-(2x+2)]$$

$$(x+1)\mid(\cancel{2x}+3-\cancel{2x}-2) \Rightarrow (x+1)\mid 1$$

$$\Rightarrow x+1\in D_1 \Rightarrow x+1\in\{1,-1\} \Rightarrow x\in\{0,-2\} \Rightarrow A=\{-2\}$$

$$\frac{\frac{1}{2}}{3} = \frac{\frac{1}{2}}{\frac{3}{1}} = \frac{1}{2} : \frac{3}{1} = \frac{1}{2}\cdot\frac{1}{3} = \frac{1}{6}$$

$$\frac{\frac{\frac{3}{2}}{5}}{6} = \frac{\frac{\frac{3}{2}}{\frac{5}{1}}}{\frac{6}{1}} = \frac{\frac{3}{2}\cdot\frac{1}{5}}{\frac{6}{1}} = \frac{\frac{3}{10}}{\frac{6}{1}} = \frac{\cancel{3}^{1}}{10}\cdot\frac{1}{\cancel{6}_{2}} = \frac{1}{20}$$

$$\frac{1}{\frac{2}{3}} = \frac{\frac{1}{1}}{\frac{2}{3}} = \frac{1}{1} : \frac{2}{3} = \frac{1}{1}\cdot\frac{3}{2} = \frac{3}{2}$$

$$2^{-3} = \frac{1}{2^3} = \frac{1}{8}$$

$$\frac{1}{\frac{\frac{2}{3}}{4}} = \frac{\frac{1}{1}}{\frac{\frac{2}{3}}{\frac{4}{1}}} = \frac{\frac{1}{1}}{\frac{\cancel{2}^{1}}{3}\cdot\frac{1}{\cancel{4}_{2}}} = \frac{\frac{1}{1}}{\frac{1}{6}} = \frac{1}{1}\cdot\frac{6}{1} = 6$$

$$\left(\frac{3}{5}\right)^{-2} = \frac{1}{\left(\frac{3}{5}\right)^{2}} = \frac{1}{\frac{9}{25}} = \frac{25}{9}$$

$$\frac{2^{-3}}{3} = \frac{\frac{1}{2^3}}{\frac{3}{1}} = \frac{\frac{1}{8}}{\frac{3}{1}} = \frac{1}{8}\cdot\frac{1}{3} = \frac{1}{24}$$

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