

$$\Pi = \left\{ x \in \mathbb{N} \mid \frac{3x-1}{2x+3} \in \mathbb{N} \right\}$$

$$\frac{3x-1}{2x+3} \in \mathbb{N} \Leftrightarrow (2x+3) \mid (3x-1) \Rightarrow (2x+3) \mid (3x-1) \cdot 2 \Leftrightarrow$$

$$(2x+3) \mid (6x-2) \Leftrightarrow \frac{6x-2}{2x+3} \in \mathbb{N}$$

$$\begin{cases} 9 + ? = -2 \\ ? = -2 - 9 \\ ? = -11 \end{cases}$$

$$\frac{6x-2}{2x+3} = \frac{3 \cdot 2x + 3 \cdot 3 - 11}{2x+3} = \frac{3(2x+3) - 11}{2x+3} = \frac{3(2x+3)}{2x+3} - \frac{11}{2x+3} = 3 - \frac{11}{2x+3} \in \mathbb{N}$$

$$\Rightarrow \frac{11}{2x+3} \in \mathbb{N} \Rightarrow (2x+3) \mid 11 \Leftrightarrow (2x+3) \in \{1, -1, 11, -11\} \Leftrightarrow$$

$$2x+3 = -11$$

$$2x = -11 - 3$$

$$2x = -14$$

$$x = -\frac{14}{2}$$

$$x = -7$$

$$2x \in \{-2, -4, 8, -14\} \Leftrightarrow$$

$$x \in \{-1, -2, 4, -7\}$$

$$E(x) = \frac{6x-2}{2x+3} \Rightarrow \begin{array}{c|c|c|c|c} x & -1 & -2 & 4 & -7 \\ \hline E(x) & -8 & 14 & 2 & 4 \end{array}$$

$$\Pi = \{4\} \quad P = \{x \in \mathbb{Z} \mid E(x) \in \mathbb{Z}\} = \{-1, -2, 4, -7\}$$

$$D = \{x \in \mathbb{Z} \mid E(x) \in \mathbb{N}\} = \{-2, 4, -7\}$$

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