2.192 klasa 1

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2.192

$V_{AB} = 70 \text{ km/h}$

$V_{BA} = 50 \text{ km/h}$

$S_{AB} = S_{BA}$!

$\Downarrow$

$$\bar{V} = \frac{2 \cdot 350}{350\left(\frac{1}{70} + \frac{1}{50}\right)} = \frac{700}{5+7} =$$

$$\frac{700}{12} = \underline{58\tfrac{1}{3} \text{ km/h}}.$$

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2.193

$V_1 = 72\ km/h$

$\bar{V} = 57{,}6\ km/h$

$V_2 = ?$

$S_1 = S_2$

$$\bar{V} = \frac{2}{\frac{1}{V_1} + \frac{1}{V_2}} \quad \Big| \left(\cdot M : \bar{V}\right)$$

$$\boxed{\frac{1}{V_1}} + \frac{1}{V_2} = \frac{2}{\bar{V}} \quad \Big| - \frac{1}{V_1}$$

$$\frac{1}{V_2} = \frac{2}{\bar{V}} - \boxed{\frac{1}{V_1}} = \frac{2V_1 - \bar{V}}{\bar{V} \cdot V_1}$$

$$\boxed{V_2 = \frac{\bar{V} \cdot V_1}{2V_1 - \bar{V}}}$$

$$\frac{1}{V_1} + \frac{1}{V_2} = \frac{2}{V} \quad \Big| - \frac{1}{V_1}$$

$$\frac{1}{V_2} = \frac{2}{V} - \frac{1}{V_1}$$

$V_2 = 48\ km/h$

4.2.3 indukcja

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4.2.3 indukcja

$n \in N$

$T: 10^n + 4^n - 2 = 3l \quad l \in Z$

$D: T(0): L(0) = 0 \quad 3|0$ ok.

$Z_k: 10^k + 4^k - 2 = 3l_2$

$T_{k+1}: 10^{k+1} + 4^{k+1} - 2 = 3l_3$

$D: 10^{k+1} + 4^{k+1} - 2 = 10 \cdot 10^k + 4 \cdot 4^k - 2 =$

$10^k + 9 \cdot 10^k + 4^k + 3 \cdot 4^k - 2 \overset{zał}{=} 3(l_2 + \underbrace{3 \cdot 10^k + 4^k}_{l_3 \in Z})$

Wi. . . .

4.1.9 indukcja

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4.1.9

$$1^3+2^3+3^3+\dots+n^3=(1+2+3+\dots+n)^2=\frac{(n+1)^2\cdot n^2}{4}$$

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

$L(1)=1=P(1)=1$ ok

Z_k: $1^3+2^3+\dots+k^3=(1+2+\dots+k)^2$

$$T_{k+1}: \underbrace{1^3+\dots+k^3}_{Z_i}+(k+1)^3=(\underbrace{1+\dots+k}_{a}+\underbrace{(k+1)}_{b})^2=\underbrace{(1+2+\dots+k)^2}_{(\ )^2}+2(1+2+\dots+k)(k+1)+(k+1)^2$$

D: $(1+2+\dots+k)^2+(k+1)^3$

$$P_T=(\ )^2+(k+1)\left(2(1+2+\dots+k)+k+1\right)=$$

$$=(k+1)\left(\cancel{2}\cdot\frac{(1+k)k}{\cancel{2}}+k+1\right)$$

$k+k^2+k+1=k^2+2k+1$

$$\begin{array}{l} 1+2+3+\dots+n \\ n+n-1+n-2\ \dots+2+1 \\ \hline (n+1)+\qquad (n+1)+(n+1) \end{array}$$

$$\frac{n\cdot(n+1)}{2}$$