Work

June 25 2019

① 0.25_{10} $\xrightarrow{\text{base 2}}$ 0.01

$0.25_{10} \times 2 = 0.50$

$0.50 \times 2 = 1.00$

$0.01_2 \xrightarrow{\text{base 8}} 0.2_8$

$0.01_2 \xrightarrow{\text{base 16}} 0.4_{16}$

④ $0.1101_2 \xrightarrow{\text{base 8}}$ base 0.64_8

[110 → 6, 100 → 4]

$0.1101_2 \xrightarrow{\text{base 16}} 0.D_{16}$

[1101 → D]

$0.64_8 \xrightarrow{\text{base 10}} 6 \times 8^{-1} + 4 \times 8^{-2} = 0.8125_{10}$

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② $0.25_8 \xrightarrow{\text{base 2}} 0.010101_2$ [010 → 2, 101 → 5]

$00.\underline{010}\,\underline{101}\,\underline{00} \xrightarrow{\text{base 16}} 0.54_{16}$ [0101 → 5, 0100 → 4]

$2 \times 8^{-1} + 5 \times 8^{-2} = 5 \times 16^{-1} + 4 \times 16^{-2}$

$0.328125 = 0.328125$

∴ Base 10 → 0.328125_{10}

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③ $0.25_{16} \xrightarrow{\text{base 2}} 0.\underline{001}\,\underline{00101}_2$ [0010 → 2, 0101 → 5]

$0.00100101_2 \xrightarrow{\text{base 8}} 0.112_8$ [001 → 1, 001 → 1, 010 → 2]

$2 \times 16^{-1} + 2 \times 16^{-2} = 1 \times 8^{-1} + 1 \times 8^{-2} + 2 \times 8^{-3}$

$0.14453125 = 0.14453125$

∴ Base → 0.14453125_{10}

Solution :

(1) 0.25_{10}

Base 2 : 0.01_2

Base 8 : 0.2_8

Base 16 : 0.4_{10}

(2) 0.25_8

Base 2 : 0.010101_2

Base 10 : 0.328125_{10}

Base 16 0.54_{16}

(3) 0.25_{16}

Base 2 : 0.00100101_2

Base 8 : 0.112_8

Base 10 : 0.14453125_{10}

(4) 0.1101_2

Base 8 : 0.64_8

Base 10 : 0.8125_{10}

Base 16 : 0.D