Solution (#444) (i) Let $\alpha = 2/7$. Then

$$\lfloor \alpha \rfloor = 0; \qquad \alpha_1 = \left(\frac{2}{7} - 0 \right)^{-1} = \frac{7}{2}.$$

$$\lfloor \alpha_1 \rfloor = 3; \qquad \alpha_2 = \left(\frac{7}{2} - 3 \right)^{-1} = 2.$$

Hence $2/7 = [0, 3, 2]$.

(ii) Let $\alpha = 13/17$. Then

$$\lfloor \alpha \rfloor = 0; \qquad \alpha_1 = \left(\frac{13}{17} - 0 \right)^{-1} = \frac{17}{13}.$$

$$\lfloor \alpha_1 \rfloor = 1; \qquad \alpha_2 = \left(\frac{17}{13} - 1 \right)^{-1} = \frac{13}{4}.$$

$$\lfloor \alpha_2 \rfloor = 3; \qquad \alpha_3 = \left(\frac{13}{4} - 3 \right)^{-1} = 4.$$

Hence $13/17 = [0, 1, 3, 4]$

(iii) Let $\alpha = 217/99$. Then

$$\lfloor \alpha \rfloor = 2; \qquad \alpha_1 = \left(\frac{217}{99} - 2 \right)^{-1} = \frac{99}{19}.$$

$$\lfloor \alpha_1 \rfloor = 5; \qquad \alpha_2 = \left(\frac{99}{19} - 5 \right)^{-1} = \frac{19}{4}.$$

$$\lfloor \alpha_2 \rfloor = 4; \qquad \alpha_3 = \left(\frac{19}{4} - 4 \right)^{-1} = \frac{4}{3}.$$

$$\lfloor \alpha_2 \rfloor = 1; \qquad \alpha_4 = \left(\frac{4}{3} - 1 \right)^{-1} = 3.$$

Hence $217/99 = [2, 5, 4, 1, 3]$