Excercise 2

$a = 2002$

$b = 10$

$c = 18$

(I)

1. $\dfrac{2002}{10 \cdot 18} = \dfrac{2002}{180} = 11 + \dfrac{1}{\left(\dfrac{180}{22}\right)} =$

$= 11 + \dfrac{1}{8 + \dfrac{1}{\left(\dfrac{22}{4}\right)}} = 11 + \dfrac{1}{8 + \dfrac{1}{5 + \dfrac{1}{2}}} = [11; 8, 5, 2]$

2. $\dfrac{2002}{180}$

$2002 = \boxed{11} \cdot 180 + 22$

$180 = \boxed{8} \cdot 22 + 4$

$22 = \boxed{5} \cdot 4 + 2$

$4 = \boxed{2} \cdot 2$

Answer: $[11; 8, 5, 2]$

$$\boxed{\text{II}} \quad \sqrt{180} = 13 + \sqrt{180} - 13 = 13 + \cfrac{1}{\left(\cfrac{1}{\sqrt{180}-13}\right)} =$$

$$= 13 + \cfrac{1}{\left(\cfrac{\sqrt{180}+13}{11}\right)} = 13 + \cfrac{1}{\left(\cfrac{26+\left(\sqrt{180}-13\right)}{11}\right)} =$$

$$= 13 + \cfrac{1}{2 + \left(\cfrac{\sqrt{180}-9}{11}\right)} = 13 + \cfrac{1}{2 + \cfrac{1}{\left(\cfrac{11}{\sqrt{180}-9}\right)}} =$$

$$= 13 + \cfrac{1}{2 + \cfrac{1}{\left(\cfrac{\sqrt{180}+9}{9}\right)}} = 13 + \cfrac{1}{2 + \cfrac{1}{\left(\cfrac{22+\left(\sqrt{180}-13\right)}{9}\right)}} =$$

$$\simeq 13 + \cfrac{1}{2 + \cfrac{1}{2 + \left(\cfrac{\sqrt{180}-9}{9}\right)}} = 13 + \cfrac{1}{2 + \cfrac{1}{2 + \cfrac{1}{\left(\cfrac{9}{\sqrt{180}-9}\right)}}} =$$

$$= 13 + \cfrac{1}{2 + \cfrac{1}{2 + \cfrac{1}{\left(\cfrac{\sqrt{180}+9}{11}\right)}}} = 13 + \cfrac{1}{2 + \cfrac{1}{2 + \cfrac{1}{\cfrac{22+\sqrt{180}-13}{11}}}} =$$

$$= 13 + \cfrac{1}{2 + \cfrac{1}{2 + \cfrac{1}{2 + \left(\frac{\sqrt{180}-13}{11}\right)}}} = 13 + \cfrac{1}{2 + \cfrac{1}{2 + \cfrac{1}{2 + \left(\frac{11}{\sqrt{180}-13}\right)}}} =$$

$$= 13 + \cfrac{1}{2 + \cfrac{1}{2 + \cfrac{1}{2 + \left(\frac{\sqrt{180}+13}{1}\right)}}} = 13 + \cfrac{1}{2 + \cfrac{1}{2 + \cfrac{1}{2 + \cfrac{1}{26 + \left(\frac{\sqrt{180}-13}{1}\right)}}}} =$$

$$\sout{= 13 + \cfrac{1}{2 + \cfrac{1}{2 + \cfrac{1}{2 + \cfrac{1}{26 + \cfrac{1}{\left(\sqrt{180}-13\right)}}}}}} = 13 + \cfrac{1}{2 + \cfrac{1}{2 + \cfrac{1}{2 + \cfrac{1}{26 + \sqrt{180} - 13}}}} =$$

$$= [13; \overline{2,2,2,26}]$$

Ответ: $\sout{[13; \overline{2,2,2,26}]}$ $[13; \overline{2,2,2,26}]$