Домашняя работа.

Задание 1

$a = 2002$
$b = 3$
$c = 21$

I способ

$$\frac{2002}{3 \cdot 21} = \frac{2002}{63} = \frac{286}{9}$$

$2002 = 63 \cdot 31 + 49$
$63 = 49 \cdot 1 + 14$
$49 = 14 \cdot 3 + 7$ НОД
$14 = 7 \cdot 2$

$$286 = 9 \cdot 31 + 7$$
$$9 = 7 \cdot 1 + 2 \quad \Rightarrow$$
$$7 = 2 \cdot 3 + 1$$
$$2 = 1 \cdot 2$$

$$\Rightarrow \frac{2002}{3 \cdot 21} = [31; 1, 3, 2]$$

II способ

$$\frac{2002}{3 \cdot 21} = \frac{286}{9} = 31 + \frac{7}{9} =$$

$$= 31 + \frac{1}{\left(\frac{9}{7}\right)} = 31 + \frac{1}{1 + \frac{2}{7}} =$$

$$= 31 + \frac{1}{1 + \frac{1}{\left(\frac{7}{2}\right)}} = 31 + \frac{1}{1 + \frac{1}{3 + \frac{1}{2}}} =$$

$$= 31 + \frac{1}{1 + \frac{1}{3 + \frac{1}{2}}} = [31; 1, 3, 2]$$

Ответ: $[31; 1, 3, 2]$

Задание 2. $b=3,\ c=21$

$$\sqrt{63} = 7+(\sqrt{63}-7) = 7+\frac{1}{\left(\frac{1}{\sqrt{63}-7}\right)} =$$

$$= 7+\frac{1}{\frac{\sqrt{63}+7}{14}} = 7+\frac{1}{1+\frac{\sqrt{63}-7}{14}} =$$

$$= 7+\frac{1}{1+\frac{1}{\left(\frac{14}{\sqrt{63}-7}\right)}} = 7+\frac{1}{1+\frac{1}{14+(\sqrt{63}-7)}} =$$

$$= 7+\frac{1}{1+\frac{1}{14+\frac{1}{\left(\frac{1}{\sqrt{63}-7}\right)}}} = 7+\frac{1}{1+\frac{1}{14+\frac{1}{1+\frac{\sqrt{63}-7}{14}}}} =$$

$$= [7;\ \overline{1,14}]$$

Ответ: $[7;\ \overline{1,14}]$