Resolução - Lista 3°bi

1b) i) $S_3 = 7$

ii) $S_7 = 7^2 - 2 = 47$

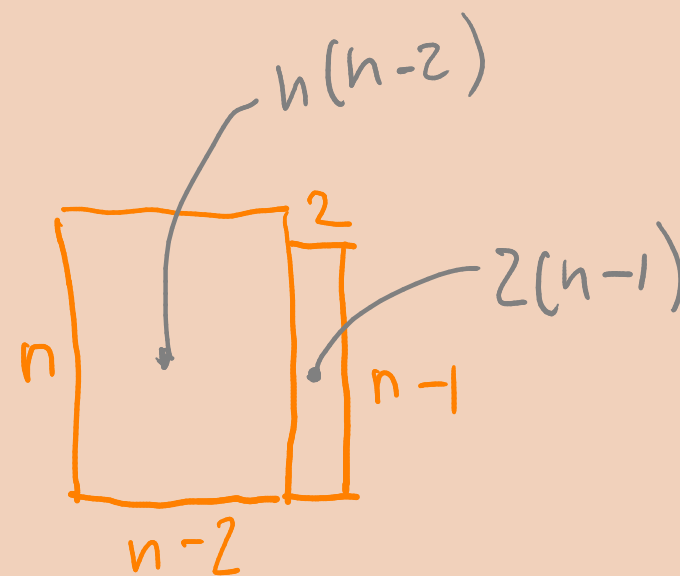iii) $S_{11} = 11^2 - 2 = 121 - 2 = 119$

iv) $S_n = n^2 - 2$

c) n é a ordem, S_n é o número de Lodrilhos:

$$S_n = n^2 - 2$$

OBS: Tem vários jeitos de fazer a c) e a d)

d) $S_n = n(n-2) + 2(n-1)$

2) a) $S = 1 + 2 + \cdots + 49 + 50$

$S = 50 + 49 + \cdots + 2 + 1$

$2S = \underbrace{51 + 51 + \cdots + 51 + 51}_{50 \text{ vezes}}$

$2S = 51 \cdot 50$

$S = \dfrac{51 \cdot 50}{2}$

$S = 51 \cdot 25$

$S = 1275$

$$
\begin{array}{r}
51 \\
\times\ 25 \\
\hline
255 \\
1020 \\
\hline
1275
\end{array}
$$

b) $S = 2 + 4 + 6 + \cdots + 58 + 60$

$S = 60 + 58 + 56 + \cdots + 4 + 2$

$2S = \underbrace{62 + 62 + 62 + \cdots + 62 + 62}_{30 \text{ vezes}}$

$2S = 62 \cdot 30$

$$S = \frac{62 \cdot 30}{2}$$

$$S = 62 \cdot 15$$

$$S = 930$$

$$\begin{array}{r} 62 \\ \times 15 \\ \hline 310 \\ 620 \\ \hline 930 \end{array}$$

impares	
$1°$	1
$2°$	3
$3°$	5
$4°$	7
$5°$	9
...	...
$n°$	$2n-1$

c) $5°$ ímpar: $2 \cdot 5 - 1 = 9$

$19°$ ímpar: $2 \cdot 19 - 1 = 38 - 1 = 37$

Do $5°$ ao $19°$ ímpar existem 15 ímpares

$$S = 9 + 11 + 13 + \cdots + 35 + 37$$

$$S = 37 + 35 + 33 + \cdots + 11 + 9$$

$$2S = \underbrace{46 + 46 + 46 + \cdots + 46 + 46}_{15 \text{ vezes}}$$

$$2S = 46 \cdot 15$$

$$S = \frac{46 \cdot 15}{2} = 23 \cdot 15$$

$$S = 345$$

$$\begin{array}{r} 23 \\ \times 15 \\ \hline 115 \\ +230 \\ \hline 345 \end{array}$$

d) Entre (e inclusive) o 5 e o 21 existem 17 números.

$$S = 5 + 6 + \ldots + 21$$

$$S = 21 + 20 + \ldots + 5$$

$$2S = \underbrace{26 + 26 + \ldots + 26}_{17 \text{ vezes}}$$

$$S = \frac{26 \cdot 17}{2}$$

$$S = 13 \cdot 17$$

$$S = 221$$

$$
\begin{array}{r}
2 \\
13 \\
17 \\
\hline
91 \\
130 \\
\hline
221
\end{array}
$$

3) a) $x + \dfrac{1}{2} = -\dfrac{3}{5}$

$$x = -\dfrac{3}{5} - \dfrac{1}{2}$$

$$x = -\dfrac{6}{10} - \dfrac{5}{10}$$

$$x = -\dfrac{11}{10}$$

b) $\dfrac{1}{5}k + 3 = \dfrac{1}{10}$

$$\dfrac{1}{5}k = \dfrac{1}{10} - 3$$

$$\dfrac{1}{5}k = \dfrac{1}{10} - \dfrac{30}{10}$$

$$\dfrac{1}{5}k = -\dfrac{29}{10}$$

$$k = \dfrac{-29}{10} \div \dfrac{1}{5}$$

$$k = -\dfrac{29}{10} \cdot \dfrac{5}{1}$$

$$k = -\dfrac{29}{1} \cdot \dfrac{5}{10}$$

$$k = -\dfrac{29}{1} \cdot \dfrac{1}{2}$$

$$k = -\dfrac{29}{2}$$

c) $\dfrac{1}{5}(k+3) = \dfrac{3}{15}$

$\dfrac{1}{5}k + \dfrac{1}{5} \cdot 3 = \dfrac{3}{15}$

$\dfrac{1}{5}k + \dfrac{3}{5} = \dfrac{1}{5}$

$\dfrac{1}{5}k = \dfrac{1}{5} - \dfrac{3}{5}$

$\dfrac{1}{5}k = -\dfrac{2}{5}$

$k = -\dfrac{2}{5} \div \dfrac{1}{5}$

$k = -\dfrac{2}{5} \cdot \dfrac{5}{1}$

$k = -2$

d) $\dfrac{2}{7}\left(y - \dfrac{7}{5}\right) + 3 = \dfrac{3}{7}(y-2)$

$\dfrac{2}{7}y - \dfrac{2}{7} \cdot \dfrac{7}{5} + 3 = \dfrac{3}{7}y - \dfrac{3}{7} \cdot 2$

$\dfrac{2}{7}y - \dfrac{2}{5} + \dfrac{15}{5} = \dfrac{3}{7}y - \dfrac{6}{7}$

$\dfrac{2}{7}y + \dfrac{13}{5} = \dfrac{3}{7}y - \dfrac{6}{7}$

$\dfrac{2}{7}y - \dfrac{3}{7}y = -\dfrac{6}{7} - \dfrac{13}{5}$

$-\dfrac{1}{7}y = -\dfrac{30}{35} - \dfrac{91}{35}$

$-\dfrac{1}{7}y = -\dfrac{121}{35}$

$y = -\dfrac{121}{35} \div \left(-\dfrac{1}{7}\right)$

$y = \dfrac{121}{35} \cdot \dfrac{7}{1}$

$y = \dfrac{121}{5}$

$\begin{array}{r} 13 \\ \times 7 \\ \hline 91 \end{array}$ $\quad {}^{2}$

e) $x(x+5) - x^2 = \frac{1}{3}$

$$x^2 + x \cdot 5 - x^2 = \frac{1}{3}$$

$$5x = -\frac{1}{3}$$

$$x = -\frac{1}{3} \div 5$$

$$x = -\frac{1}{3} \cdot \frac{1}{5}$$

$$x = -\frac{1}{15}$$

f) $3(z+2) = \frac{1}{5}\left(3 + \frac{2}{5}\right) + z$

$$3z + 6 = \frac{3}{5} + \frac{2}{25} + z$$

$$3z - z = \frac{3}{5} + \frac{2}{25} - 6$$

$$2z = \frac{15}{25} + \frac{2}{25} - \frac{150}{25}$$

$$2z = -\frac{133}{25}$$

$$z = -\frac{133}{25} \div 2$$

$$z = -\frac{133}{25} \cdot \frac{1}{2}$$

$$z = -\frac{133}{50}$$

$$\begin{array}{r} 3 \\ 25 \\ \times 6 \\ \hline 150 \end{array}$$

$$\begin{array}{r} 4\,{}^{1}_{0} \\ 15\!\!\!/0 \\ -17 \\ \hline 133 \end{array}$$