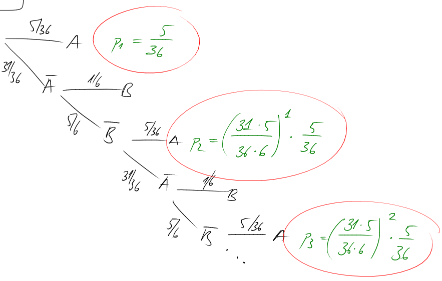
$\boxed{9.19}$



Calcul de la probabilité que A gagne:

$$p_n = \left(\frac{155}{216}\right)^{n-1} \cdot \frac{5}{36}$$

$$\sum_{i=1}^{\infty} p_i = p_1 + p_2 + p_3 + \dots$$ ⚠ Converge?

$$\lim_{n\to\infty} (\underbrace{p_1 + \dots + p_n}_{S_n})$$

$$a = \frac{155}{216}$$

$$S_n = \left(\frac{155}{216}\right)^0 \cdot \frac{5}{36} + \left(\frac{155}{216}\right)^1 \cdot \frac{5}{36} + \dots + \left(\frac{155}{216}\right)^{n-1} \cdot \frac{5}{36}$$

$$= \frac{5}{36}\left(1 + a + a^2 + \dots + a^{n-1}\right)$$

Rappel: $\boxed{(1 + x + x^2 + \dots + x^{n-1})}(1-x) =$

$$\boxed{\begin{array}{l} 1 + \cancel{x} + \cancel{x^2} + \dots + \cancel{x^{n-2}} + \cancel{x^{n-1}} \\ - \cancel{x} - \cancel{x^2} - \dots - \cancel{x^{n-2}} - \cancel{x^{n-1}} - x^n \end{array}} = 1 - x^n$$

$$\Rightarrow (1 + x + x^2 + \dots + x^{n-1}) = \frac{1-x^n}{1-x}$$

$$\Rightarrow S_n = \frac{5}{36} \cdot \left(\frac{1-a^n}{1-a}\right)$$

$$= \frac{5}{36} \cdot \frac{1 - \left(\frac{155}{216}\right)^n}{\frac{216-155}{216}}$$

$$= \frac{5}{36} \cdot \frac{216}{61} \left(1 - \left(\frac{155}{216}\right)^n\right)$$

$n \to \infty$

$$\Rightarrow p(A) = \sum_{i=1}^{\infty} p_i = \frac{30}{61}$$

$$\frac{5}{\cancel{36}} \cdot \frac{\cancel{216}^{\,6}}{61} \cdot 1$$