Actividad en Clase
Succesiones y Progresiones

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Problema 1 *Determina el 7^{th} termino de 200, 100, 50...*

$$\begin{aligned} a_n &= a_1 * rn - 1 \\ a_7 &= 200 * \left(\frac{1}{2}\right)^6 \\ a_7 &= 200 * \frac{1}{2^6} \\ a_7 &= \frac{200}{64} \\ a_7 &= \frac{25}{8} \end{aligned} \tag{1}$$

Problema 2 *Determina el razon si el 1^{st} termino es $\frac{3}{5}$ y el 5^{th} termino es $\frac{1}{135}$*

$$\begin{aligned} r &= \sqrt[n-1]{\frac{a_n}{a_1}} \\ r &= \sqrt[4]{\frac{\frac{1}{135}}{\frac{3}{8}}} \\ r &= \sqrt[4]{\frac{8}{405}} \\ r &= \sqrt[4]{\frac{1}{81}} \\ r &= \frac{1}{3} \end{aligned} \tag{2}$$

Problema 3 *Determina el numero de terminos de -2, -6, ..., -162*

$$\begin{aligned} n &= \frac{\log n - \log a_1 + \log r}{\log r}; \qquad r = \frac{a_n}{a_{n-1}} \\ n &= \frac{\log -162 - \log -2 + \log 3}{\log 3} \quad r = \frac{-6}{-2} = 3 \\ n &= \frac{\log -162 - \log -2 + \log 3}{\log 3} \\ n &= 5 \end{aligned} \tag{3}$$

Problema 4 *Encuentra la suma de los primeros 9 terminos de -5, 10, -20...*

$$\begin{aligned} S_n &= \frac{a_1(1-r^n)}{1-r} \qquad r = \frac{a_n}{a_{n-1}} \\ S_9 &= \frac{-5(1-(-2)^9)}{1-(-2)} \quad r = \frac{10}{-5} = -2 \\ S_9 &= \frac{-5(1+512)}{1+2} \\ S_9 &= \frac{-5(513)}{3} \\ S_9 &= \frac{-2565}{3} \\ S_9 &= -855 \end{aligned} \tag{4}$$