LÍMITES

Problema 29:

Siendo

$$S_n = \frac{n^n}{n!}$$

Y

$$S_{n+1} = \frac{(n+1)^{n+1}}{(n+1)!}$$

Hallar:

$$\lim_{n\to\infty} \frac{S_{n+1}}{S_n}$$

Solución problema 29:

$$\lim_{n\to\infty} \frac{S_{n+1}}{S_n} = \lim_{n\to\infty} \frac{\frac{(n+1)^{n+1}}{(n+1)!}}{\frac{n^n}{n!}} = \lim_{n\to\infty} \frac{(n+1)^{n+1} \cdot n!}{(n+1)! \cdot n^n} = \lim_{n\to\infty} \frac{(n+1)^n \cdot \cancel{(n+1) \cdot n!}}{\cancel{n! \cdot (n+1)} \cdot n^n} = \lim_{n\to\infty} \frac{(n+1)^n}{n^n} = \lim_{n\to\infty} (\frac{n+1}{n})^n =$$

$$= \lim_{n\to\infty} (\frac{n+1}{n})^n = \lim_{n\to\infty} (\frac{n}{n} + \frac{1}{n})^n = \lim_{n\to\infty} (1 + \frac{1}{n})^n = e$$