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Recall that $\sum_{k=0}^{n} ar^k = \frac{a(1-r^{n+1})}{1-r}$ (assuming $r \neq 1$)

Since $\sum_{j=1}^{13} 7^j$ begins at $j=1$, we reindex.

$$\sum_{j=1}^{13} 7^j = \sum_{j=0}^{12} 7^{j+1} = \underbrace{\sum_{j=0}^{12} 7 \cdot 7^j}_{a=7,\ r=7,\ n=12} = \frac{7(1-7^{13})}{1-7} = -\frac{7}{6}(1-7^{13})$$