Finite Geometric Sums Practice Problems Calc 2 Due Never

Each problem is worth 0 points. For full credit provide complete justification for your answers.

1. Evaluate $\sum_{n=0}^{20} \frac{1}{7^n}$.

2. Evaluate $\frac{2}{3}-\frac{2}{9}+\frac{2}{27}-\frac{2}{81}+\frac{2}{243}-\frac{2}{729}$.

3. Evaluate $\sum_{i=1}^{12} 2\cdot\left(\frac{3}{4}\right)^i$.

4. Express the sum $1+\frac{1}{3}+\frac{1}{9}+\ldots+\frac{1}{3^n}$ in terms of n.

5. Express the sum $5 + 10 + 20 + 40 + \ldots + 5\cdot 2^n$ in terms of n.

6. How many terms does it take before the series $\frac{1}{2}+\frac{1}{4}+\frac{1}{8}+\ldots+\frac{1}{2^n}$ is within one one-millionth of totaling 1?

As always, keep in mind that an answer without justification is worth at most half credit. The first forms listed here are the ones I'd prefer, but the silly expanded versions are also provided it you like them.

1. $\frac{\left(1-\frac{1}{7^{21}}\right)}{\frac{6}{7}}=\frac{93090977347214001}{79792266297612001}$

2. $\frac{1-\frac{1}{3^6}}{2}=\frac{364}{729}$

3. $6\left(1-\left(\frac{3}{4}\right)^{12}\right)$

4. $\frac{3}{2}\left(1-\frac{1}{3^{n+1}}\right)$

5. $-5(1-2^{n+1})$

6. By the 20th term the partial sum is within 0.000001 of 1.