Geometric Series

1. Find the sum of the series:

A. $4-\frac{4}{5}+\frac{4}{25}-\frac{4}{125}+\cdots$

B. $3+\frac{1}{3}+\frac{1}{27}+\frac{1}{81}+\cdots$

C. $e-\frac{e^2}{5}+\frac{e^3}{25}-\frac{e^4}{125}+\cdots$

D. $\sum_{n=3}^{\infty}\frac{1}{4^n}$

E. $\sum_{n=0}^{\infty}\frac{2^{n+1}+3}{4^n}$

F. $\sum_{n=0}^{\infty}\frac{5^n}{3^n}$

3. A ball is dropped from a height of 9.0 m. On each upward bounce the ball returns to $\frac{1}{3}$ of it previous height.

A. Find the expression for the height to which the ball rises after it hits the floor for the n^{th} time.

B. Find the total vertical distance the ball travels before coming to rest.