Determine if the Geometric Series Converges of Diverges. If it converges, give its sum

1. $\sum_{n=0}^{\infty}(5)\left(\frac{1}{2}\right)^n$
2. $\sum_{n=0}^{\infty}(2)\left(\frac{5}{2}\right)^n$
3. $\sum_{n=1}^{\infty}(3)\left(\frac{2}{3}\right)^n$

Find all values of x for which the series converges. For these values of x, write the sum of the series

1. $\sum_{n=0}^{\infty}\left(\frac{x}{3}\right)^n$
2. $\sum_{n=0}^{\infty}(-1)^n(6x)^n$
3. $\sum_{n=1}^{\infty}(6x)^n$