1. For which numbers $x$ does the Taylor series of $f(x) = \frac{2}{5-x} + \frac{6}{2+x}$ converge to $f(x)$?
2. (a) Use the geometric sum formula to show that
\[
\frac{x}{1-x} = x + x^2 + x^3 + \cdots + x^n + \frac{x^{n+1}}{1-x}.
\]

(b) For which values of \( x \) does the Taylor series of \( g(x) = \frac{2x}{4x - 3} \) converge to \( g(x) \)?