$$
\begin{aligned}
f(x) &= \frac{3+x}{1-x} = (3+x)\left(\frac{1}{1-x}\right) = (3+x)\sum_{n=0}^{\infty} x^n = \sum_{n=0}^{\infty}(3+x)x^n \quad . \\
&= 3\sum_{n=0}^{\infty} x^n + \sum_{n=0}^{\infty} x^{n+1} = 3 + \sum_{n=1}^{\infty} 3x^n + \sum_{n=1}^{\infty} x^n = 3 + 4\sum_{n=1}^{\infty} x^n
\end{aligned}
$$

The series converges when $|x| < 1$, so $R = 1$ and $I = (-1, 1)$.

A second approach:

$$
\begin{aligned}
f(x) &= \frac{3+x}{1-x} = \frac{-(1-x)+4}{1-x} = -1 + 4\left(\frac{1}{1-x}\right) \ . \\
&= -1 + 4\sum_{n=0}^{\infty} x^n = 3 + 4\sum_{n=1}^{\infty} x^n
\end{aligned}
$$

A third approach:

$$
\begin{aligned}
f(x) &= \frac{3+x}{1-x} = (3+x)\left(\frac{1}{1-x}\right) = (3+x)(1 + x + x^2 + x^3 + \cdots) \\
&= (3 + 3x + 3x^2 + 3x^3 + \cdots) + (x + x^2 + x^3 + x^4 + \cdots) \\
&= 3 + 4x + 4x^2 + 4x^3 + \cdots = 3 + 4\sum_{n=1}^{\infty} x^n .
\end{aligned}
$$