11.2 #4

A) Since $\lim_{n\to\infty} S_n = \lim_{n\to\infty} \frac{2n+1}{5n+2} = \frac{2}{5}$ The series will converge to the value of $\frac{2}{5}$.

ie $\sum_{n=1}^{\infty} a_n = \frac{2}{5}$

B)

$$a_n = S_n - S_{n-1}$$

$$= \frac{2n+1}{5n+2} - \frac{2(n-1)+1}{5(n-1)+2}$$

This is a great answer.

$$= \frac{2n+1}{5n+2} - \frac{2n-2+1}{5n-5+2} = \frac{2n+1}{5n+2} - \frac{2n-1}{5n-3} = a_n$$

$$= \frac{(2n+1)(5n-3) - (2n-1)(5n+2)}{(5n+2)(5n-3)}$$

$$= \frac{10n^2-n-3-(10n^2-n-2)}{25n^2-5n-6}$$

$$a_n = \frac{-1}{25n^2-5n-6}$$ simplified answer