

Solutions

Each answer shows the steps, then the **result**.

2.1

- $S_3 = 1 + \frac{1}{2} + \frac{1}{3} = \frac{11}{6}$

2.2

- Sum = 3 (as $N \rightarrow \infty$, $\frac{1}{N} \rightarrow 0$)

2.3

- Diverges ($S_N \rightarrow \infty$)

3.1 B

- convergence is defined by the partial sums approaching a finite limit

3.2

(a)

- $S_3 = (1 - \frac{1}{2}) + (\frac{1}{2} - \frac{1}{3}) + (\frac{1}{3} - \frac{1}{4}) = 1 - \frac{1}{4} = \frac{3}{4}$

(b)

- $S_N = 1 - \frac{1}{N+1}$; as $N \rightarrow \infty$, sum = 1

3.3

- $\frac{N}{N+1} \rightarrow 1$, so the series converges to 1