Solutions

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

2.1

- $b_n = \dfrac{1}{n^2}$

2.2

- $b_n = \frac{1}{n^2} > 0$ and decreasing; $\lim b_n = 0$

2.3

- Converges

3.1 B

- b_n must be decreasing

3.2

(a)

- $b_n = \frac{1}{\sqrt{n}} > 0$, decreasing, and $\to 0$

(b)

- Converges by the alternating series test

3.3

- The alternating signs let successive terms partly cancel, so the partial sums settle to a limit; without the signs ($\sum \frac{1}{n}$) there is no cancellation and the sum grows without bound