ALTERNATING SERIES QUIZ

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Name: Solutions

1. Decide whether the series

$$\sum_{n=1}^{\infty} \frac{(-1)^n}{n\sqrt{n}}$$

converges or diverges. Justify your answer.

$$b_n = \frac{1}{n\sqrt{n}} = \frac{1}{n^{3/2}}$$

$$n^{3/2} \leq (n+1)^{3/2} \implies \frac{1}{(n+1)^{3/2}} = b_{n+1} \leq b_n = \frac{1}{n^{3/2}}$$

and

$$\lim_{n \to \infty} b_n = \lim_{n \to \infty} \frac{1}{n^{3/2}} = 0$$

So

$$\sum_{n=1}^{\infty} \frac{(-1)^n}{n\sqrt{n}} \quad \text{Converges by the A.S.T.}$$