Answers to Week 8

• **Section 10.2**

1. \( s_N = 3 - \frac{3}{N + 1} \), series converges to 3.
2. \( a_n = \ln(n + 1) - \ln(n) \), series diverges.
3. 4,400 yards
4. The series converges to 5.
5. \( \frac{17}{33} \)

• **Section 10.3**

1. (Other reasons possible; must be justified)
   (a) series is convergent by the Integral Test.
   (b) series is divergent by the Test for Divergence.
   (c) series is convergent by the Comparison Test with \( \sum \left( \frac{1}{2} \right)^n \).
   (d) series is divergent by the Limit Comparison Test with \( \sum \frac{1}{\sqrt{n}} \).
   (e) series is divergent by the Comparison Test with \( \sum \frac{1}{n} \).
   (f) series is divergent by the Limit Comparison Test with \( \sum \frac{\pi}{n} \).
2. \( .40488 + \frac{1}{2} e^{-121/2} \leq s \leq .40488 + \frac{1}{2} e^{-50} \)
3. at least 100