Quiz 3

Name: Solution Key

Answer all questions in a clear and concise manner. Unsupported answers will receive *no credit.*

1. Consider the infinite series $\sum_{n=1}^{\infty}(-1)^n\frac{n+1}{n}$.

   (a) What are the first three terms of the series?

   $a_1 = -2 \qquad a_2 = \frac{3}{2} \qquad a_3 = -\frac{4}{3}$

   (b) What are the first three partial sums?

   $S_1 = a_1 = \boxed{-2}$

   $S_2 = a_1 + a_2 = -2 + \frac{3}{2} = \boxed{-\frac{1}{2}}$

   $S_3 = a_1 + a_2 + a_3 = -2 + \frac{3}{2} - \frac{4}{3} = -\frac{3}{6} - \frac{8}{6} = \boxed{-\frac{11}{6}}$

   (c) Does the series converge or diverge?

   Diverge by the Divergence Test since $\lim_{n\to\infty}(-1)^n\frac{n+1}{n}$ does not exist.