Quiz 4

Name: *Solution Key*

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

1. Consider the infinite series

$$\sum_{k=2}^{\infty} \frac{3^k - 1}{17^k + k}.$$

Give an argument showing whether the series converges or diverges.

Compare to $\sum_{k=2}^{\infty} \frac{3^k}{17^k}$, which is a convergent geometric series with $r = \frac{3}{17} < 1$,

$$\frac{3^k - 1}{17^k + k} \le \frac{3^k}{17^k + k} \le \frac{3^k}{17^k},$$

So by the Comparison Test $\sum_{k=2}^{\infty} \frac{3^k - 1}{17^k + k}$ converges since $\sum_{k=2}^{\infty} \frac{3^k}{17^k}$ converges.