Math 172 | Quiz 14 | Name: _____

14 June 2016 | Show Appropriate Work | Point Values in $\boxed{\text{boxes}}$.

1. $\boxed{8}$ Please circle **T**rue or **F**alse, as appropriate.

   (a) **T / F:** The Fibonacci sequence $\{1, 1, 2, 3, 5, 8, 13, \ldots\}$ converges.

   (b) **T / F:** The sequence $\{-1, 1, -1, 1, -1, 1, \ldots\}$ converges.

   (c) **T / F:** If $0 < a_n < b_n$ and $b_n \to 0$ as $n \to \infty$, then the sequence $\{a_n\}$ converges.

   (d) **T / F :** If $a_n \to 0$ as $n \to \infty$, the sequence $\{a_n\}$ converges.

   (e) **T / F :** If $a_n \to 0$ as $n \to \infty$, the series $\sum a_n$ converges.

   (f) **T / F :** If $a_n \to 2$ as $n \to \infty$, the sequence $\{a_n\}$ converges.

   (g) **T / F :** If $a_n \to 2$ as $n \to \infty$, the series $\sum a_n$ converges.

   (h) **T / F :** The Harmonic series

   $$\sum_{n=1}^{\infty} \frac{1}{n} = 1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \frac{1}{5} + \cdots$$

   converges.

2. $\boxed{2}$ Find examples of sequences with the following properties.

   (a) A sequence that is decreasing.

   (b) A sequence that is bounded but not monotone.