1. (4 points) Complete the following definition: Suppose that $f : D \to \mathbb{R}$, where $D$ is a subset of $\mathbb{R}$. Suppose that $L \in \mathbb{R}$ and $a$ is an accumulation point of $D \cap (a, \infty)$. We say that $\lim_{x \to a^+} f(x) = L$ if and only if

2. (4 points) Complete the following definition: Suppose that $f : D \to \mathbb{R}$, where $D$ is a subset of $\mathbb{R}$. Suppose that $a$ is an accumulation point of $D$. We say that $\lim_{x \to a} f(x) = -\infty$ if and only if

3. (10 points) Evaluate the given limit. Show your work and justify your answer.
$$\lim_{x \to 0^+} \left[ \exp\left(\frac{1}{x}\right) + \sin\left(\frac{1}{x}\right) \right]$$

4. (10 points) Evaluate the given limit. Show your work and justify your answer.
$$\lim_{x \to 0^-} x \sqrt{\frac{7}{x^2} - 5}$$

5. (10 points) Locate and classify all of the points of discontinuity. Justify your answer.
$$f(x) = \begin{cases} 
  x & \text{if } x = \pm\frac{1}{n}, \; n \in \mathbb{N} \\
  x^2 & \text{otherwise}
\end{cases}$$
Recall that $\mathbb{N} = \{1, 2, 3, \ldots\}$

6. (4 points) Determine if the statement is true or false.
If $D$ is a finite subset of $\mathbb{R}$, then every function $f : D \to \mathbb{R}$ is continuous.

7. (4 points) Determine if the statement is true or false.
The function $f : \mathbb{R} \to \mathbb{R}$ defined by
$$f(x) = \begin{cases} 
  \sin(\sin x) & \text{if } x \neq 0 \\
  \frac{x}{x} & \text{if } x = 0
\end{cases}$$
is continuous.

8. (4 points) Determine if the statement is true or false.
If $f : \mathbb{R} \to \mathbb{R}$ and the sequence $\{f(n)\}, \; n \in \mathbb{N}$ converges to a real number $L$, then $\lim_{x \to \infty} f(x) = L$. 