Name: _____

Math 30 Calculus I
Spring 2016

Consider the function $f(x) = \dfrac{1}{x-1}$

1. Indicate which statements are true:

_____ If $x > 1$, then $f(x)$ is positive.

_____ If $x > 1$, then $f(x)$ is negative.

_____ If $x > 1$, then there is not enough information to determine if $f(x)$ is positive or negative.

2. Indicate which statements are true:

_____ If $x > 2$, then $f(x) > 1$.

_____ If $x > 2$, then $f(x) < 1$.

_____ If $x > 2$, then there is not enough information to determine if $f(x) > 1$ or $f(x) < 1$.

3. Indicate which statements are true:

_____ If $x > 3$, then $f(x) > \frac{1}{2}$.

_____ If $x > 3$, then $f(x) < \frac{1}{2}$.

_____ If $x > 3$, then there is not enough information to determine if $f(x) > \frac{1}{2}$ or $f(x) < \frac{1}{2}$.

4. Assume $n > 1$. Indicate which statements are true:

_____ If $x > n$, then $f(x) > \frac{1}{n-1}$.

_____ If $x > n$, then $f(x) < \frac{1}{n-1}$.

_____ If $x > n$, then there is not enough information to determine if $f(x) > \frac{1}{n-1}$ or $f(x) < \frac{1}{n-1}$.

5. Given your answers to (1) and (4), explain why the following statement is true.
If $x > n$, then $\dfrac{-1}{n-1} < f(x) < \dfrac{1}{n-1}$.

Consider the function $f(x) = \dfrac{\sin x}{x-1}$

1. Indicate which statements are true:

_____ If $x > 1$, then $f(x)$ is positive.

_____ If $x > 1$, then $f(x)$ is negative.

_____ If $x > 1$, then there is not enough information to determine if $f(x)$ is positive or negative.

2. Indicate which statements are true:

_____ If $x > 2$, then $f(x) > -1$.

_____ If $x > 2$, then $f(x) < 1$.

_____ If $x > 2$, then there is not enough information to determine if $f(x) > 1$ or $f(x) < 1$.

3. Indicate which statements are true:

_____ If $x > 3$, then $f(x) > \frac{-1}{2}$.

_____ If $x > 3$, then $f(x) < \frac{1}{2}$.

_____ If $x > 3$, then there is not enough information to determine if $f(x) > \frac{1}{2}$ or $f(x) < \frac{1}{2}$.

4. Assume $n > 1$. Indicate which statements are true:

_____ If $x > n$, then $f(x) > \frac{-1}{n-1}$.

_____ If $x > n$, then $f(x) < \frac{1}{n-1}$.

_____ If $x > n$, then there is not enough information to determine if $f(x) > \frac{1}{n-1}$ or $f(x) < \frac{1}{n-1}$.

5. Given your answers to (4), explain why the following statement is true.
If $x > n$, then $\dfrac{-1}{n-1} < f(x) < \dfrac{1}{n-1}$.