Consider the function \( f(x) = \lceil x \rceil \), the least integer greater than or equal to \( x \).
(For instance, \( \lceil 4.5 \rceil = 5 \), \( \lceil -1.3 \rceil = -1 \), and \( \lceil -2 \rceil = -2 \).) Describe, with proof, the set of points where \( f \) is continuous and discontinuous.