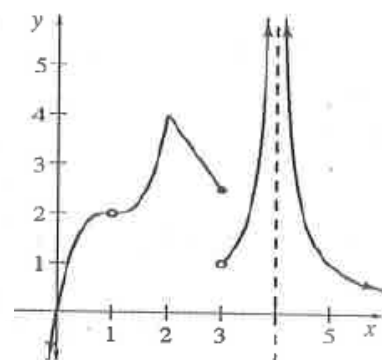# Continuity & IVT Practice   Name _____

1. Use the graph to complete the table.
   If a limit or function value does not exist, enter "DNE" in the table.
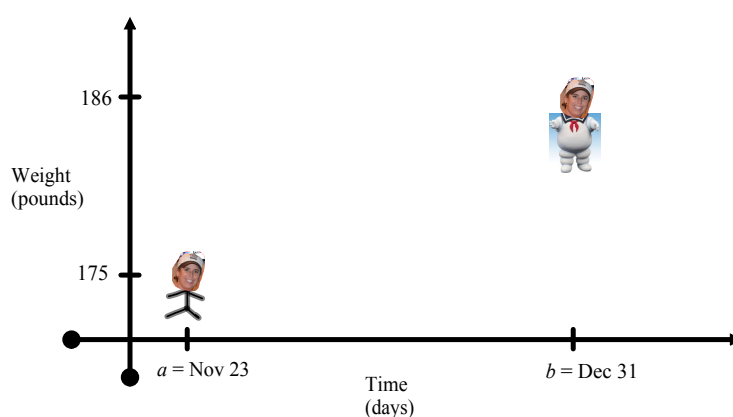
a	$\lim\limits_{x \to a^-} f(x)$	$\lim\limits_{x \to a^+} f(x)$	$\lim\limits_{x \to a} f(x)$	$f(a)$
1				
2				
3				
4				

2. Which value for "*a*" is the function continuous?
   Explain your answer using complete sentences.

The Intermediate Value Theorem and My Big Holiday Season of Overeating

The Intermediate Value Theorem does not claim to tell you *where* a function reaches a value or how many times. The theorem simply claims that every height a function reaches on a specific *x*-interval boundary will be the output at least once by some *x* within that interval.

(As is only guarantees the existence of something, it is called an existence theorem.)

Example:

Use the Intermediate Value Theorem to explain why the function $g(x) = x^2 + 3x - 6$ must have a root (*x*-intercept) on the closed interval [1, 2].

2007 AB Exam #3

The functions f and g are continuous for all real numbers, and g is strictly increasing. The table to the right gives values of the functions at selected values of x.

The function h is given by $h(x) = f(g(x)) - 6$.

x	$f(x)$	$g(x)$
1	6	2
2	9	3
3	10	4
4	−1	6

(a) Explain why there must be a value r for $1 < r < 3$ such that $h(r) = -5$.