When is a function continuous?



Given the graph of a function, f(x), above, determine if f(x) is continuous at the indicated x-value.

1) $x = -2$	2) $x = 0$
3) $x = 1$	(4) $x = 2$
5) $x = 4$	

6) Determine the domain of $f(x)$.	7) Determine the values of <i>c</i> for which the $\lim_{x\to c} f(x)$ exists.	8) Determine the interval on which $f(x)$ is continuous.

Part II: Verify if the function f(x) is continuous at the given value of x. Show all three steps of verification.

1. $f(x) = x^2; x = 2$	2. $f(x) = \begin{cases} 3x^2 - 4x, & x < 1 \\ x - 2, & x \ge 1 \end{cases}; x = 1$
3. $g(x) = \begin{cases} \frac{1}{x+4}, & x \le -1 \\ 3^x, & -1 < x < 2, & x = -1 \text{ and } x = 2 \\ x^2 - 1, & x \ge 2 \end{cases}$	4. $f(x) = \begin{cases} x - x^2, & x < 1 \\ \ln x, & x = 1, \\ x, & x > 1 \end{cases}$