For each of the following functions, sketch a graph of the function and give its domain. Determine if the function is continuous at $x = 2$ and if so, what its value is at $x = 2$. If the function is not continuous at $x = 2$, then determine if it has a limit at $x = 2$ and what that limit is.

1. $f(x) = x^2 - 4x + 4$,

2. $f(x) = \frac{1}{x + 1}$,

3. $f(x) = \frac{1}{x^2 - 4}$,

4. $f(x) = \frac{x^2 + x - 6}{x - 2}$,

5. $f(x) = \ln(x - 1)$,

6. $f(x) = \sqrt{9 - x^2}$. 

7. Below is a graph of a function defined for $x \in [-1, 2]$. At $x = 0$ and $x = 1$, determine what the function value is (if it exists). Also, find the limit as $x \to 0$ and $x \to 1$, if the limits exist. Where is this function continuous?

8. Below is a graph of a function. What is the domain of this function? At $x = 0, 1, 2$, determine what the function value is (if it exists). Also, find the limit as $x \to 0$, $x \to 1$, and $x \to 2$, if the limits exist. Where is this function continuous?
9. Use the definition of the derivative to find the derivative of the following functions.

a. \( f(x) = x^3 \),

b. \( f(x) = 3x - x^2 \),

c. \( f(x) = \sqrt{4 - x} \),

d. \( f(x) = \frac{2}{x + 3} \).