1. The function $f(x) = x|x|$ is

   (a) continuous and differentiable at $x = 0$.

   (b) continuous but not differentiable at $x = 0$.

   (c) differentiable but not continuous at $x = 0$.

   (d) neither differentiable nor continuous at $x = 0$.

2. If
$$f(x) = \begin{cases} ax + b & 0 < x \leq 1 \\ 2x^2 - x & 1 < x < 2 \end{cases} \tag{1}$$
   is a differentiable function is (0,2), then find the values of a and b.

3. A function $f : [-4, 4] \to [0, 4]$ is given by $f(x) = \sqrt{16 - x^2}$. Show that f is an onto function but not a one-one function.Further,find all possible values of 'a' for which $f(a) = \sqrt{7}$.