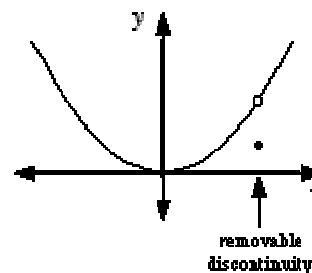A removable discontinuity is a discontinuity that can be "fixed" by re-defining the function at a point. Essentially, a removable discontinuity is a hole in the graph. More formally, we make the following definition:

A function f is said to have a **removable discontinuity** at $x = c$ if $\lim_{x \to c} f(x)$ exists but f is not continuous at $x = c$.

removable
discontinuity

Which of the following functions have a removable discontinuity?

1.

x_0

2.

$x_0 = 1$

3.
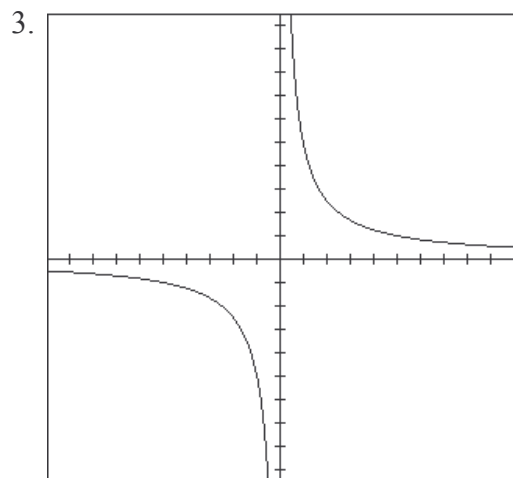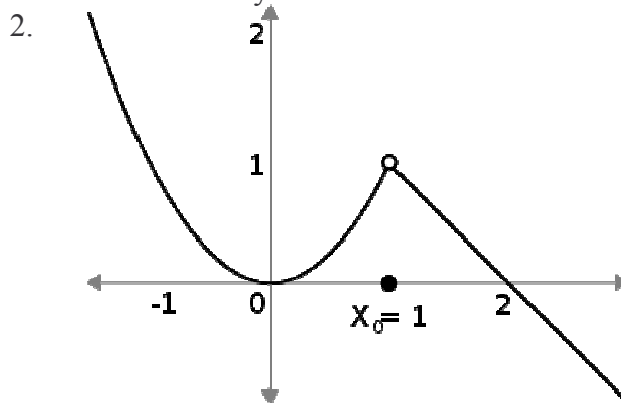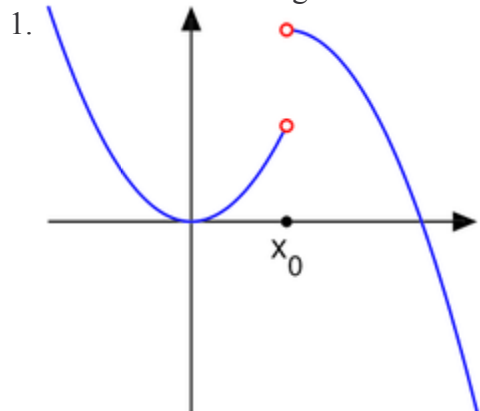
Sketch the graphs of the following functions and determine the value that should be assigned to $f(2)$ to remove the discontinuities.

4. $f(x) = \dfrac{x^2 - 4}{x - 2}$

5. $f(x) = \begin{cases} 1 & \text{if } x > 2 \\ 0 & \text{if } x = 2 \\ 1 & \text{if } x < 2 \end{cases}$