

## 1.9 – The Graph of the Function $f'$

### Differentiability

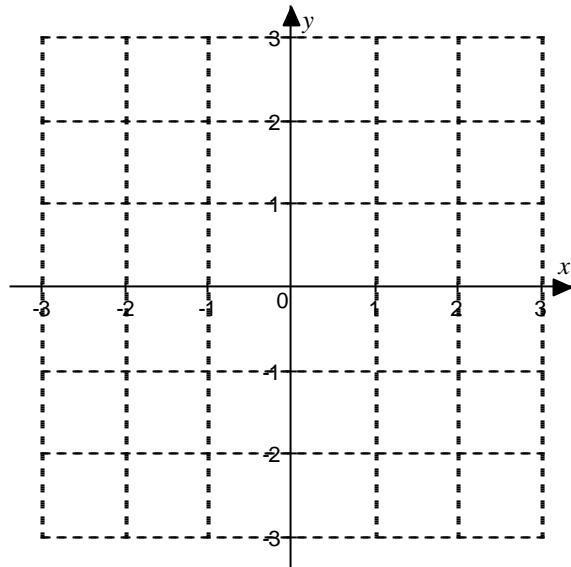
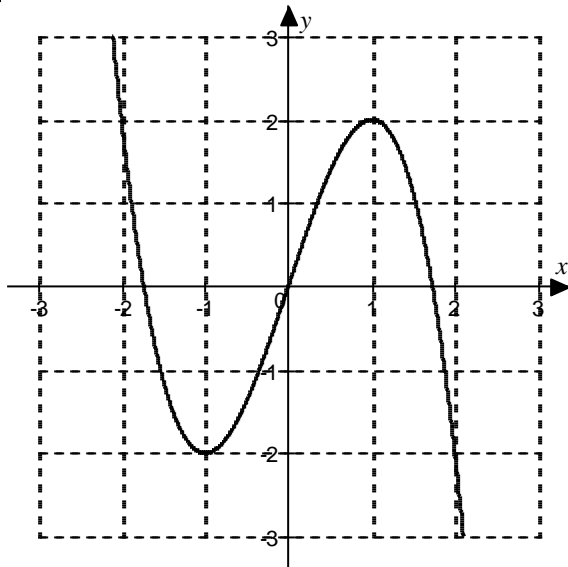
We say that a function is *differentiable* at a point if a derivative is defined at that point. A function  $f$  will fail to be differentiable at  $x = a$  if

- $f$  is discontinuous at  $x = a$ ,
- $f$  has a cusp or corner at  $x = a$ , or
- $f$  has a vertical tangent at  $x = a$ .

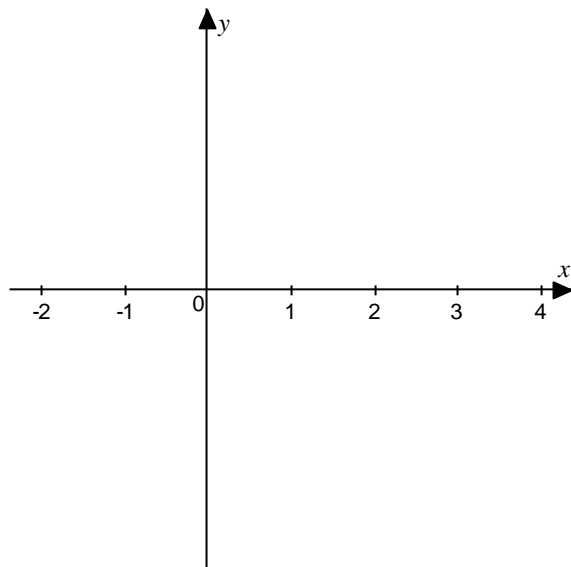
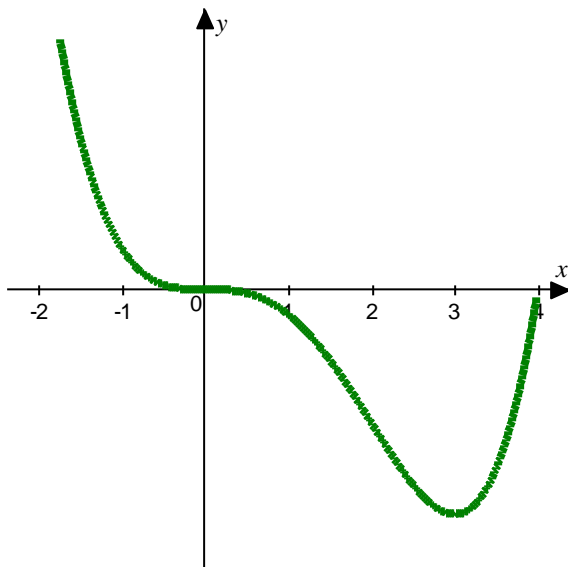
1. Provide examples of functions that have at least one point in their domain such that the derivative fails to exist. The functions should include at least one example of each case listed above.

Sketch the graph of  $f'$  on the axes provided assuming that the given graph is the graph of  $f$ .

2.



3.



4.

