

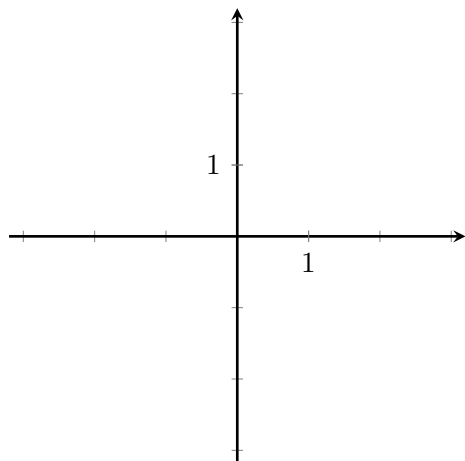
The general question we want to solve is the following: once we have found the critical points of a function, how can we determine the nature of these critical points using the first derivative?

For each of the following cases, draw a sketch for  $f(x)$ :

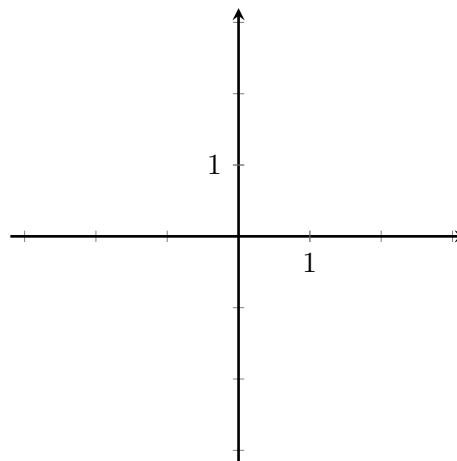
- a)  $f(x)$  with  $f'(x) < 0$ ,
- b)  $f(x)$  with  $f'(x) < 0$  on  $(-3, -1)$ ,  $f'(-1) = 0$ , and  $f'(x) < 0$  again on  $(-1, 3)$ ,
- c)  $f(x)$  with  $f'(x) < 0$  on  $(-3, -1)$ ,  $f'(-1) = 0$ , and  $f'(x) < 0$  on  $(-1, 3)$ ,
- d)  $f(x)$  with  $f'(x) < 0$  on  $(-3, -1)$ ,  $f'(-1)$  does not exist, and  $f'(x) < 0$  on  $(-1, 3)$ ,

For each of the preceding cases, what “kind” of point is  $f(-1)$ .

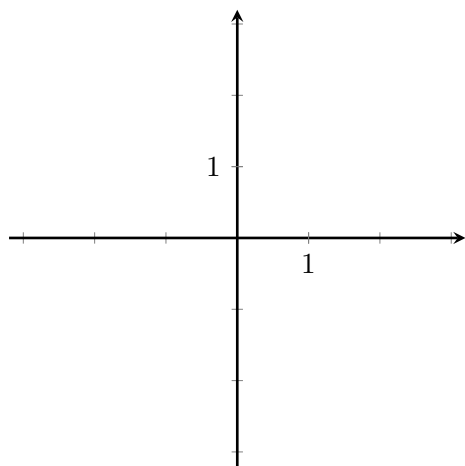
a)



c)



b)



d)

