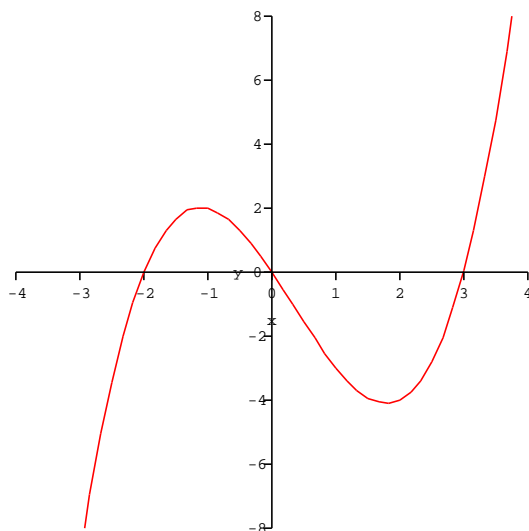


The graph of  $f'$  is given below. *This is not the graph of  $f$ !!*



1. Where does  $f$  have stationary points?

At  $x = -2$ ,  $x = 0$ , and  $x = 3$ .

2. On which intervals is  $f$  increasing? decreasing?

$f$  increases on  $(-2, 0)$  and  $(3, \infty)$ .

$f$  decreases on  $(-\infty, -2)$ ,  $(0, 3)$ .

3. Where does  $f$  achieve local maxima? local minima?

$f$  has a local max where it switches from increasing to decreasing. In other words, where  $f'$  switches from positive to negative: at  $x = 0$ .

$f$  has a local min where it switches from decreasing to increasing – in other words, where  $f'$  switches from negative to positive: at  $x = -2$  and  $x = 3$ .

4. Where does  $f$  have inflection points?

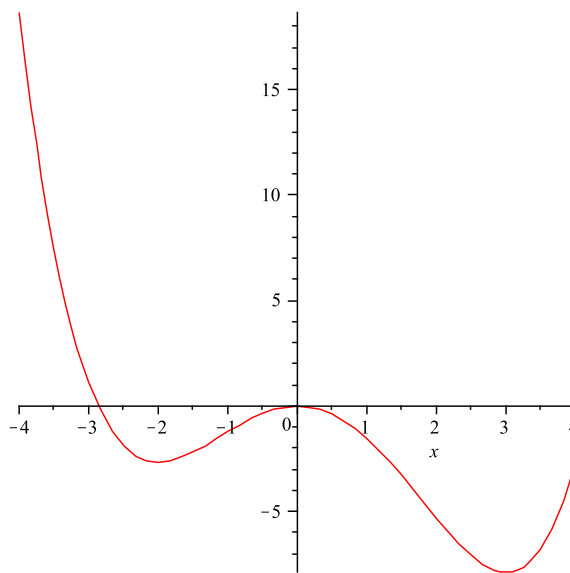
Where  $f$  switches concavity, which is where  $f'$  switches direction. Thus at  $x = -1$  and at  $x = 2$ .

5. Where is  $f$  concave up? concave down?

$f$  is concave up where  $f'$  is increasing – on  $(-\infty, -1)$  and  $(2, \infty)$ .

It's concave down where  $f'$  is decreasing – on  $(-1, 2)$ .

6. Suppose that  $f(0) = 0$ . Sketch a graph of  $f$ .



7. How does the graph change if  $f(0) = 3$ ?

Shifts up, otherwise stays the same!