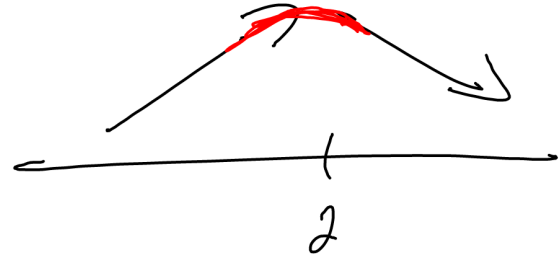2.5.3 on [0,∞) ← this was a typo.
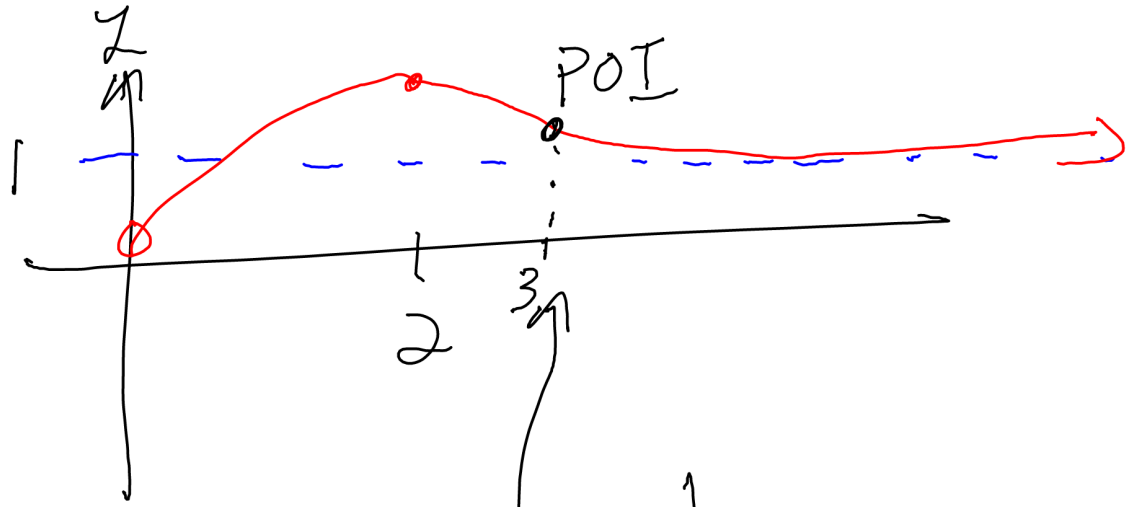
- f'(x) > 0 if 0 < x < 2
  f'(x) < 0 if x > 2.
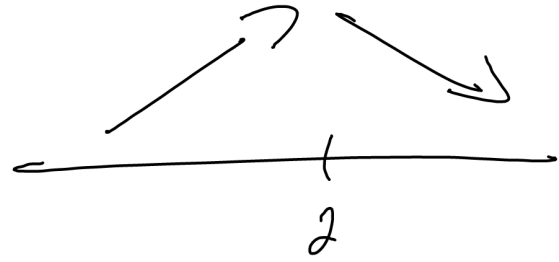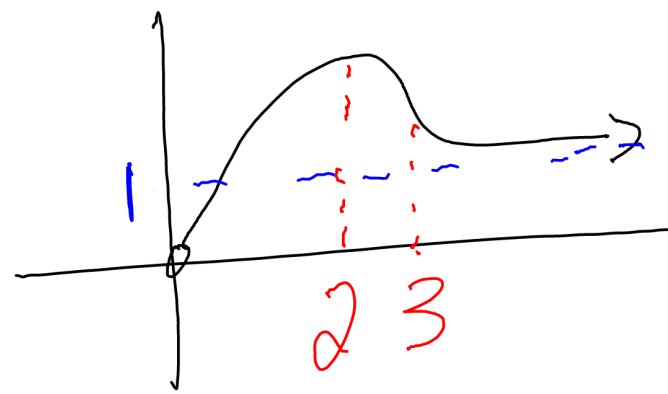
- f'(2) = 0 means that the top of the graph must smooth out to a horizontal tangent line.
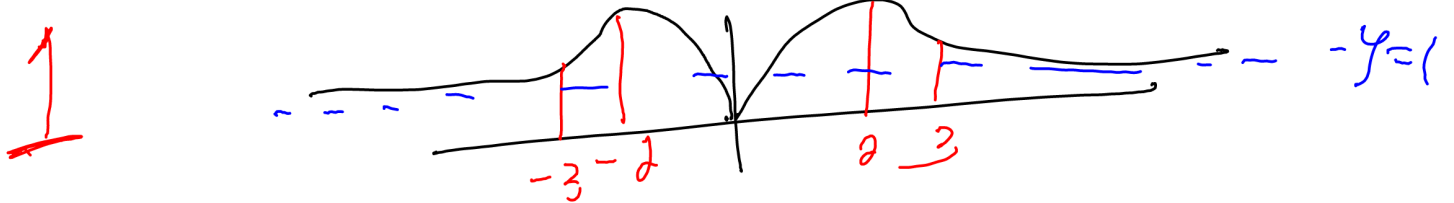
- $\lim_{x \to \infty} f(x) = 1$ → we need a tangent line at y = 1.

POI

- f'' < 0 if 0 < x < 3
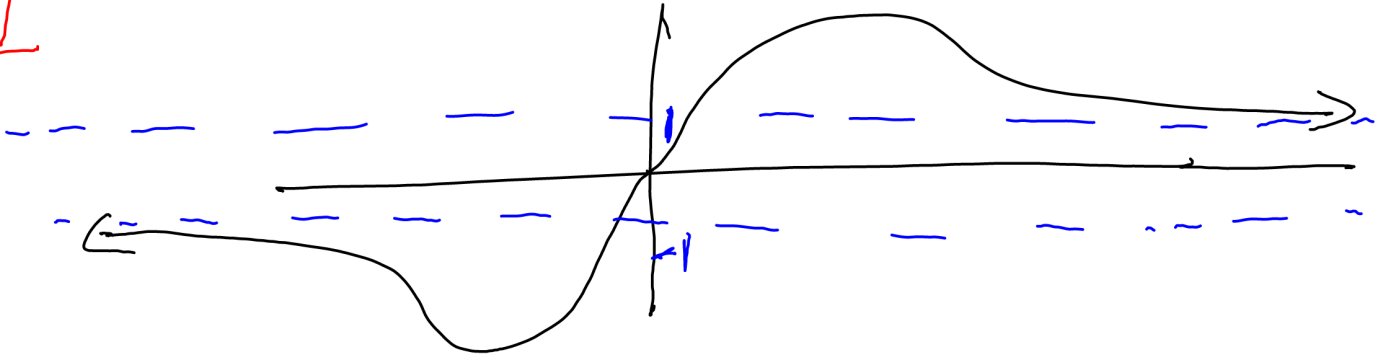 f'' > 0 if if x > 3

Bonus (i) reflect in the y-axis

-y=1

-3 -2   2 3

Bonus (ii) flip the negative part of (i).

1

2pt Bonus When does $f'(0)$ exsit.

1 (i) Never. It will have a cusp
(it's concave down with a minimum value)

ii) 1st we need $f(0)=0$

1 2nd we don't want a vertical tangent
line. I.e. $\lim\limits_{x \to 0^+} f'(x) \neq \mp\infty$.