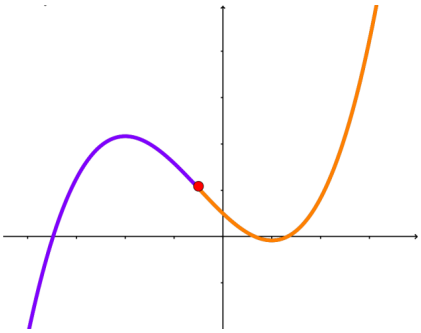
Inflection Points

Recall:

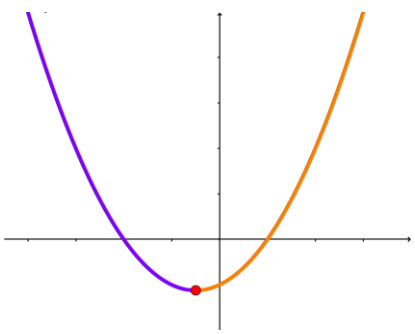
$f(x)$ is concave up if

$f(x)$ is concave down if

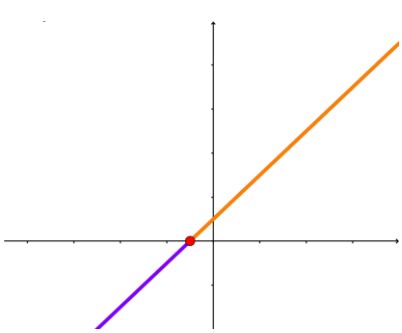
f(x)



f ’(x)



f ‘’(x)



Observation 1:

Observation 2:

Observation 3:

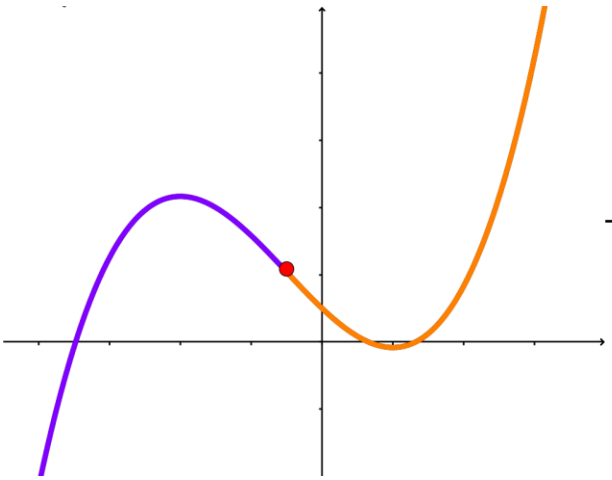
Definition: If $f(x)$ changes concavity at $x = c$ then we call $x = c$

If $x = c$ is an of $f(x)$ then $f''(c)$

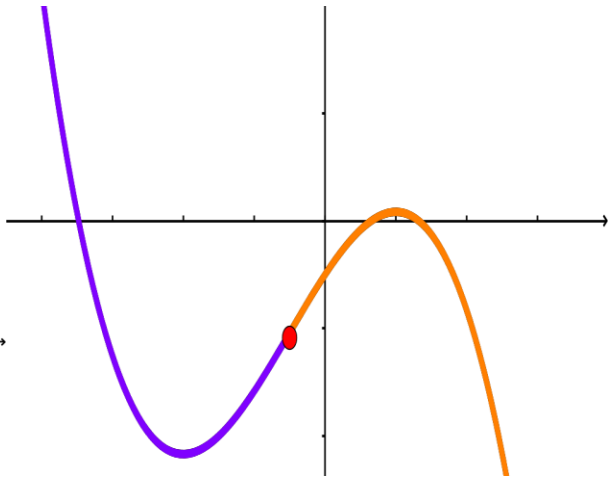
Warning: We can have $f''(d) = 0$ for a value $x = d$ that is not an inflection point. Similar to critical points that are neither a local max nor min.

At an inflection point:

f (x)



f '(x)



Example: Find when $f(x) = x^3 - 3x^2 + 3x + 6$ is concave up.