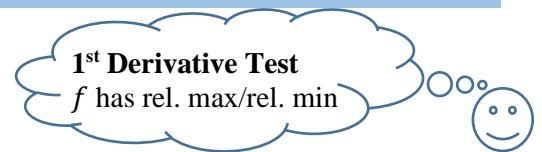


## 2nd Derivative Test

### 2<sup>nd</sup> Derivative Test

If  $c$  is a critical number of  $f$  and  $f''(x)$  exists,



① if  $f''(c) > 0$ , then

② if  $f''(c) < 0$ , then

③ if  $f''(c) = 0$ , then

## Using the 2<sup>nd</sup> Derivative Test

Example 1:

Find the relative maximums and relative minimums of  $f(x)$ .

$$f(x) = 2x^3 + 3x^2 - 12x$$

• Example 2:

Find the  $x$ -coordinate(s) where  $f(x)$  has relative maximum(s) and relative minimum(s).

•  $f(x) = x^2 e^x$

• Example 3:

• Find the relative maximums and relative minimums of  $f(x)$ .

•  $f(x) = x^{2/3}$