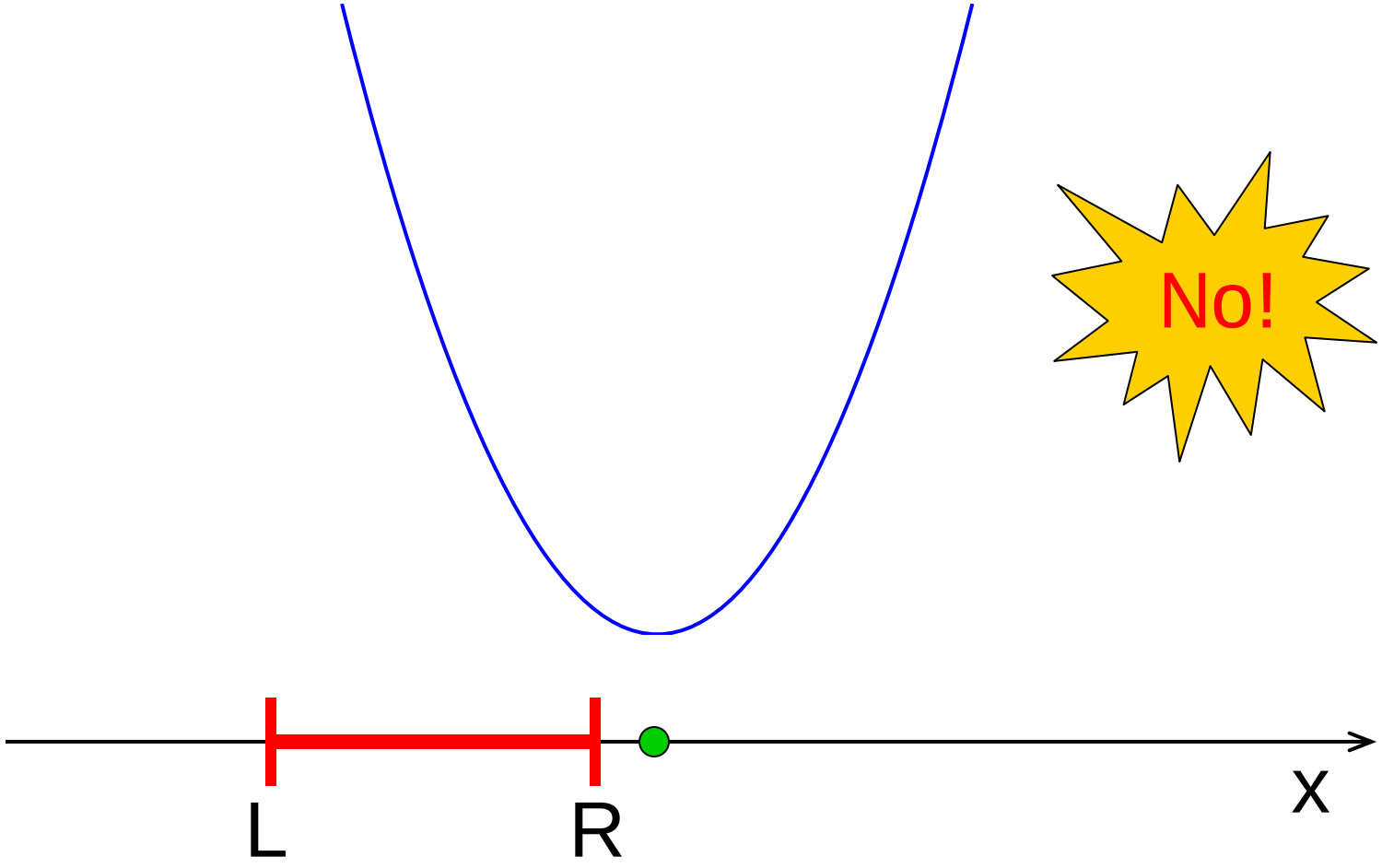
Is **xc** in the interval **[L,R]**?

$$q(x) = x^2 + bx + c$$

- $x_c = -b/2$



So what is the requirement?

```
% Determine whether xc is in
% [L,R]
xc = -b/2;

if _____________________

   disp('Yes')
else
   disp('No')
end
```

So what is the requirement?

```
% Determine whether xc is in
% [L,R]
xc = -b/2;

if L<=xc && xc<=R

   disp('Yes')
else
   disp('No')
end
```

The value of a boolean expression is either true or false.

```
(L<=xc) && (xc<=R)
```

This (compound) boolean expression is made up of two (simple) boolean expressions. Each has a value that is either *true* or *false*.

Connect boolean expressions by boolean operators:

and	or	not
&&	||	~

Logical operators

&& logical and: Are both conditions true?

E.g., we ask "is $L \leq x_c$ and $x_c \leq R$?"

In our code: **`L<=xc && xc<=R`**

Logical operators

&& logical and: Are both conditions true?

E.g., we ask "is $L \le x_c$ and $x_c \le R$?"

In our code: **L<=xc && xc<=R**

|| logical or: Is at least one condition true?

E.g., we can ask if x_c is outside of $[L,R]$,

i.e., "is $x_c \le L$ or $R \le x_c$?"

In code: **xc<=L || R<=xc**

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In code: `xc<=L || R<=xc`

~ logical not: Negation

E.g., we can ask if x_c is not outside $[L,R]$.

In code: `~(xc<=L || R<=xc)`

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In code: `~(xc<=L || R<=xc)`